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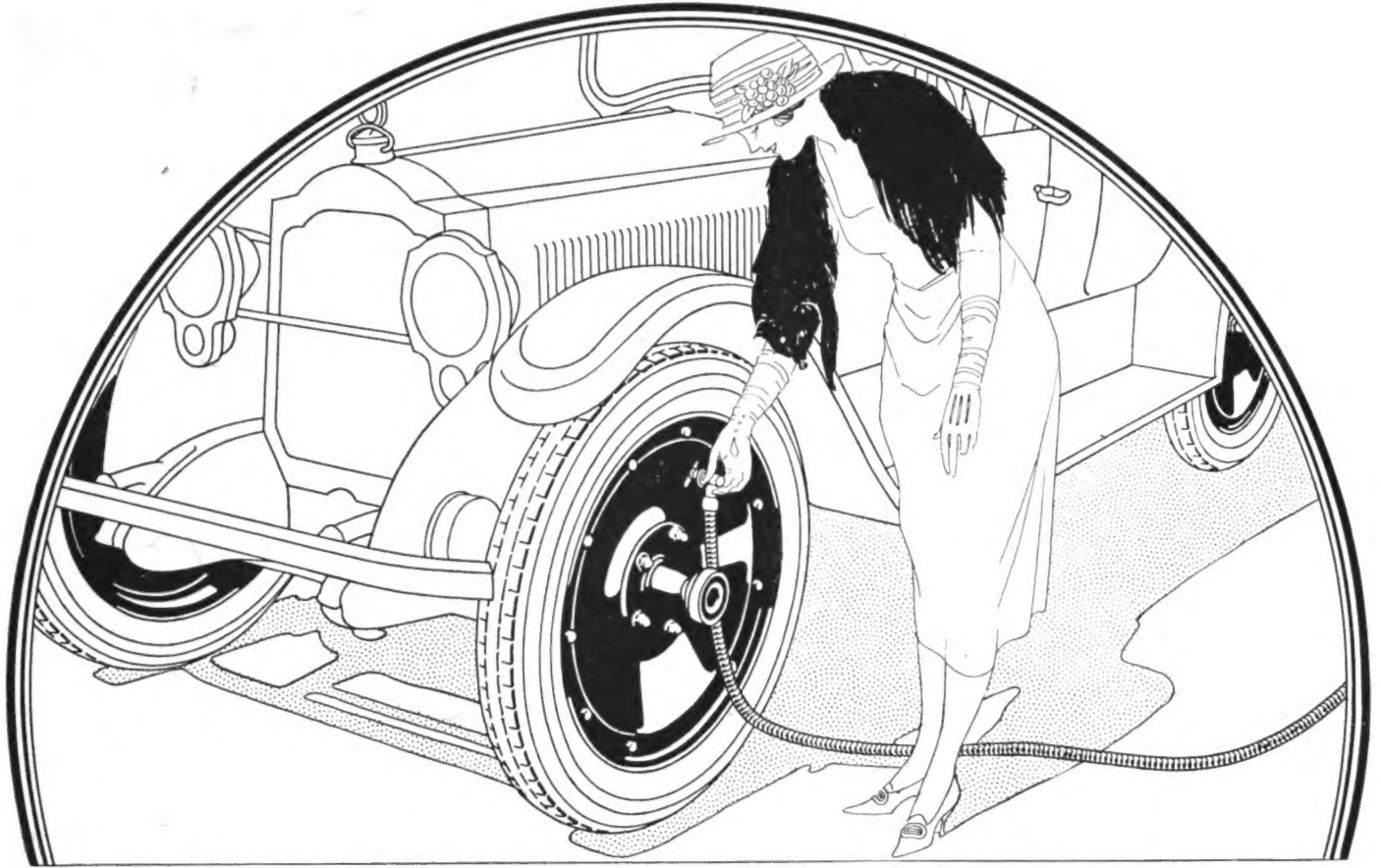
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*Vol 10-11
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1922*



JANUARY, 1922

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HERE, surely, is welcome news to the man who wants his new 1922 model motor car equipped with Disteels—and to the man who has thought of installing them on his car but who has been waiting for lower prices.

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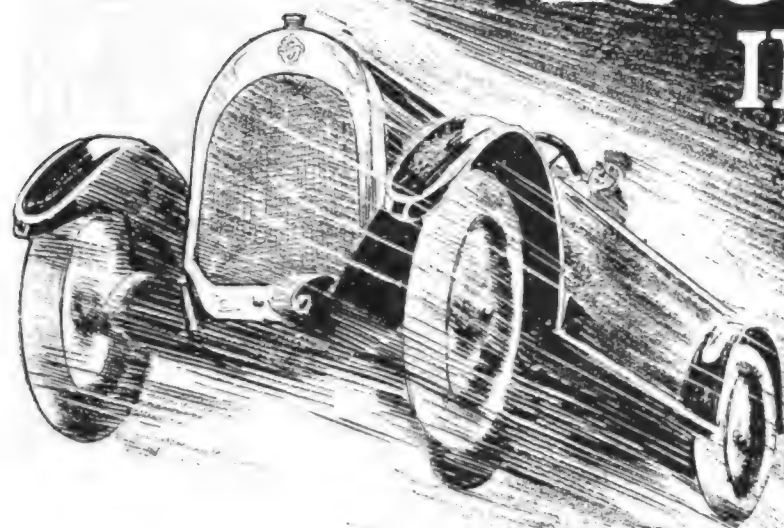
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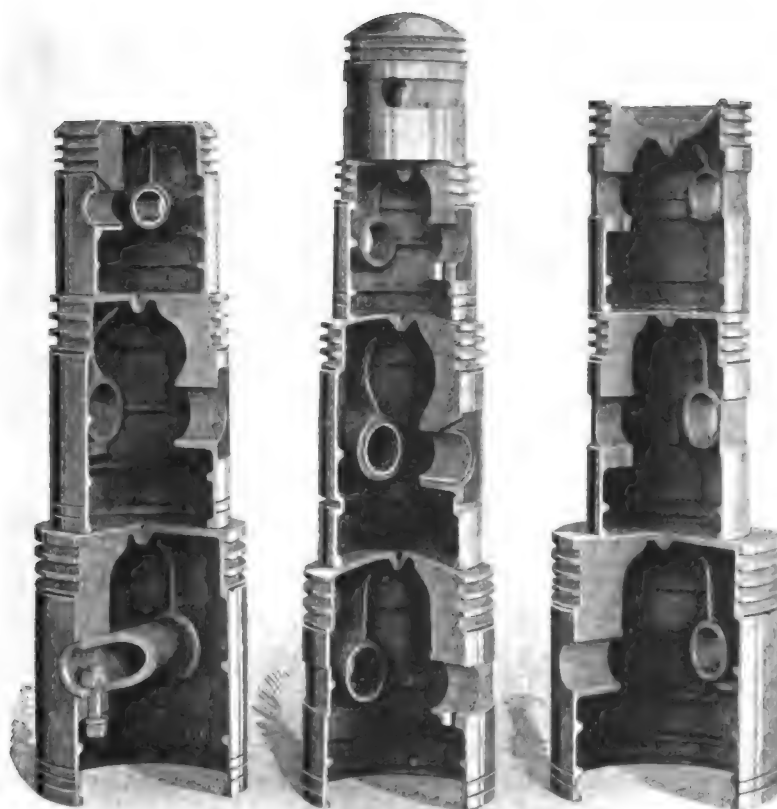
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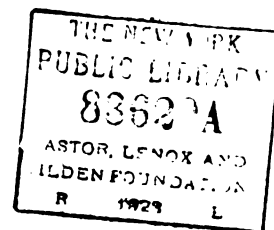
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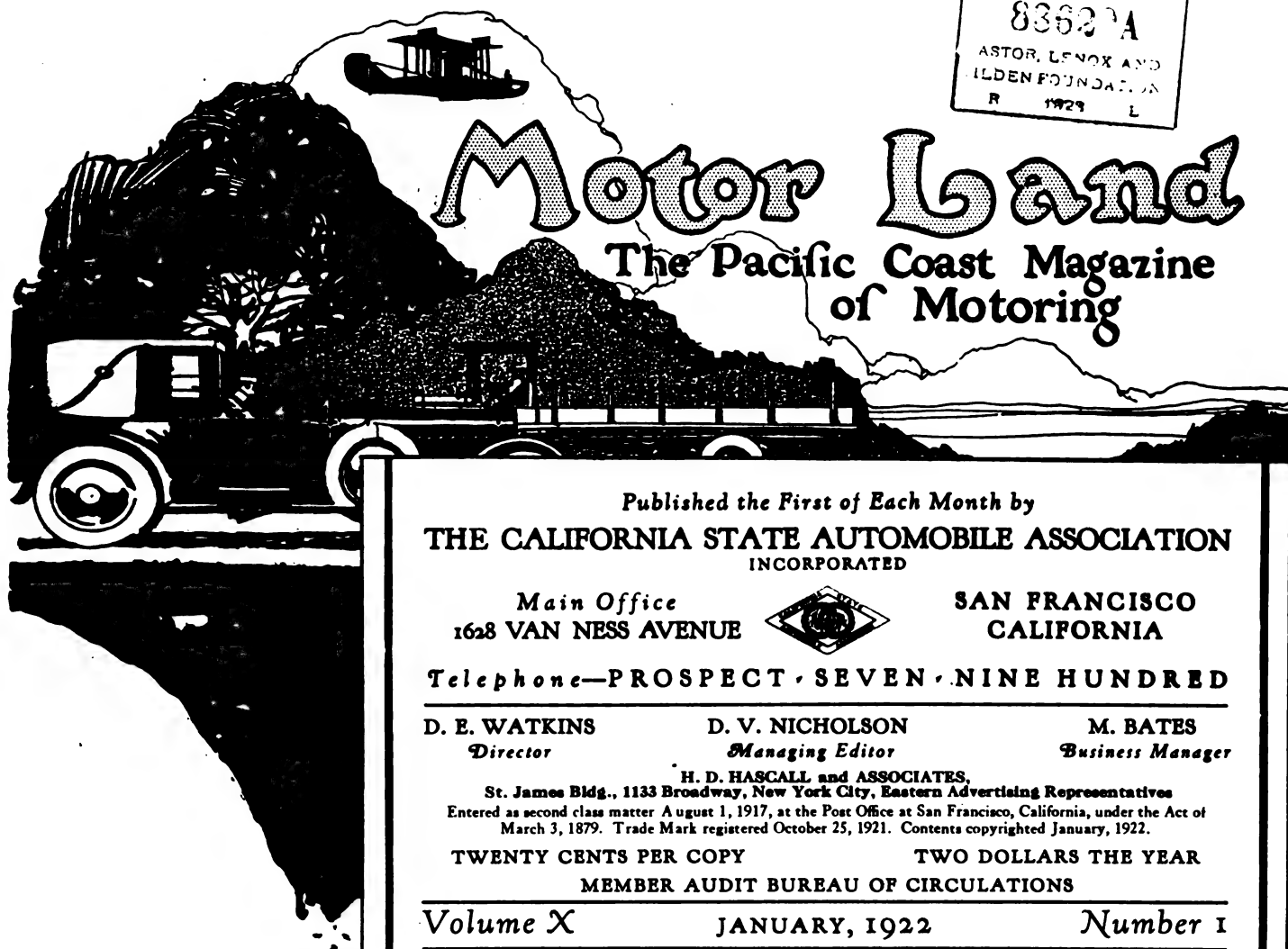
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The Pacific Coast Magazine of Motoring



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Volume X

JANUARY, 1922

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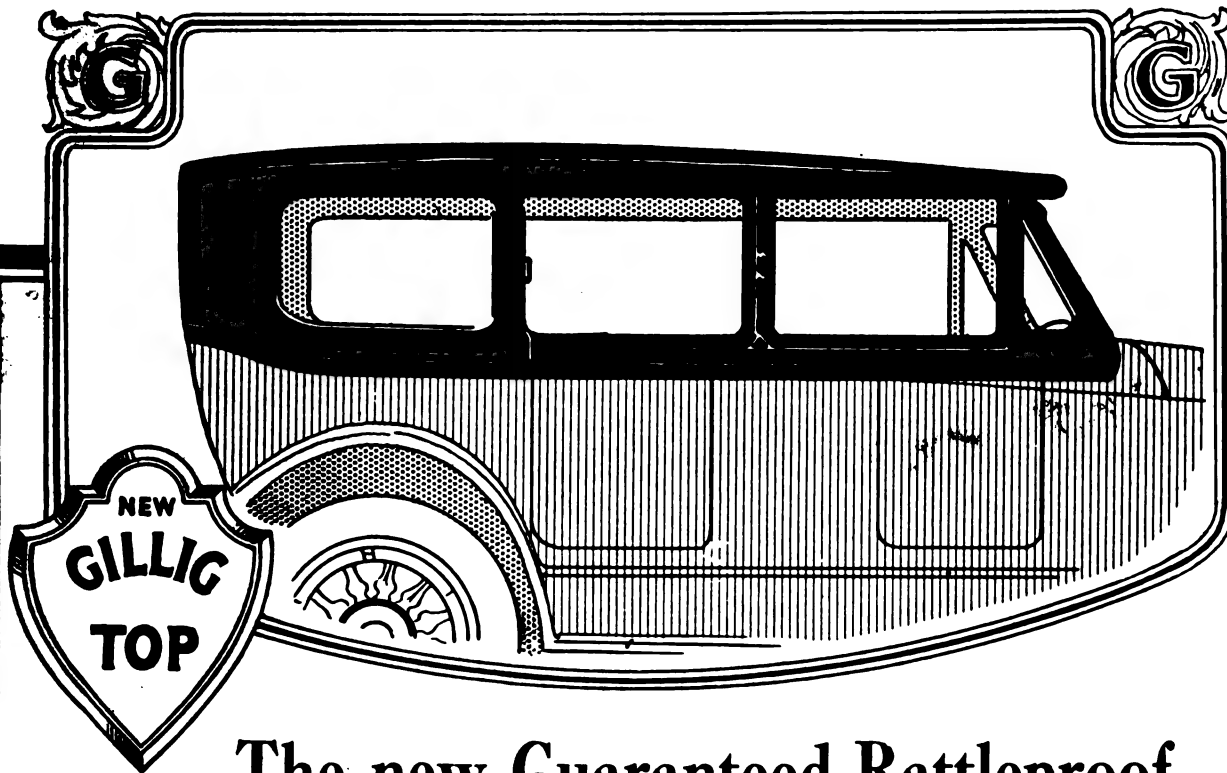
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Custom built and designed to fit any make or model of car. With the Gillig Top you can change from the touring car to sedan in a minute's time. A special feature of the Gillig top is the patented locking brake that securely holds the plate glass panels in any position. It is easy to operate, always secure and guaranteed rattleproof.

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A complete organization for repairing, painting, refinishing and coach work.

In addition to specializing in the construction of Gillig Tops we maintain complete and fully equipped facilities for repairing, painting and refinishing all types of cars. We carry a distinctive line of imported and domestic materials—linens, tapestries, velours, etc., for interior coverings suitable for Limousines or Town cars. We handle the most particular and difficult jobs of body designing and painting.

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This Amazing Air-Cooled Car Hurdles a Decade of Motor Progress

AT a time when the interest of other manufacturers seems centered on the development of minor refinements, this dynamic air-cooled car makes its historic debut.

The attractive lines and ample power typical of water-cooled construction have been combined with the outstanding economy of the air-cooled motor. The advantages of both types of cooling have been merged into a truly beautiful, supremely competent car.

This new air-cooled car cannot be gauged by existing standards because it transcends them. It establishes an entirely new standard for air-cooled cars. It cannot be compared to any other car because it is unique and unparalleled in the history of motordom. Ansley H. Fox, the designer and maker of the famous Fox shotgun, and the capable corps of engineers and designers associated with him, present a mechanical masterpiece—the Fox Air-Cooled Car.

Never, at any price, has a more graceful and beautiful car been built. Every line of the low-hung body is in exquisite taste. The dominant impression is one of well-poised power and graceful symmetry.

A slight movement of the accelerator releases a surge of irresistible might. A further movement—the thrilling hum of fifty horsepower. Yet the Fox is as silent as any equally powerful water-cooled Six. In flexibility, acceleration, hill-climbing ability, power and versatility the Fox can be compared only to the most highly developed types of water-cooled cars.

The Fox has developed roadability and comfort to an unexampled degree. Terrific road impacts are transmuted into gentlest ripples by five-foot springs, stabilizers and perfect balance.

While nothing in the appearance or performance of the Fox suggests air-cooled construction, it is important to remember that it is the basic secret of light weight, great tire mileage and extraordinarily low consumption of gasoline and oil, as well as freedom from operating annoyances.

Think of commanding the power and ability of the Fox, with its 132" wheelbase, yet consistently securing 18 to 20 miles to the gallon of gasoline, and other operating economies in proportion! The constant annoyance of freezing or over-heating is completely abolished.

Everywhere in the car is evidenced advanced construction and patented features of design, deserving extended comment. But it is not fitting to single out special points, because every detail contributes to a harmonious whole.

The Fox will be exhibited during the New York, Chicago, Philadelphia and Boston Shows. At New York in the lobby of the Hotel Commodore. At Chicago in the lobby of the Auditorium Hotel.

At all shows it will be undoubtedly a veritable sensation. Not to have seen the Fox is to be unfamiliar with the decade's greatest advance in automobile construction.

FOX MOTOR CAR COMPANY, PHILADELPHIA

FOX

A Powerful-Beautiful
AIR-COOLED CAR

The first unit of the Fox factory in Philadelphia is a model of advanced construction and modern appliances. The Fox Motor Car Company is owned by more than 3,000 individuals, all of whom are motor-car owners.



Prices

(Including 5 cord tires and wire, wood or disc wheels, motometer, stabilizers, backing and automatic signal lamps, and other unusual equipment)

Open Models — Thirty-nine Hundred Dollars

Closed Models — Forty-nine Hundred Dollars

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are steadily gaining in favor with automobile owners on the coast



COAST TIRES EXCEL
IN DURABILITY AND
NON-SKID DESIGN

In public performances Coast Tires are surpassing all competing makes

Coast Tires in this year's Nevada Road Race established a record as the only tires that ever went the whole distance with but one tire changed, and that due to picking up a spike. The other three tires carried the same air during the 1000 miles of this, the hardest race of the entire year.

Coast Tires were used successfully on a non-stop run between San Jose, Reno, Carson City and return.

Coast Tires carried an Oldsmobile car on a record run of 1000 miles in 899 minutes at the Cotati Track, without a single stop for tire trouble of any kind.

Coast Tires on a Hudson test made the trip from San Francisco to New York City in a trifle over six days, and arrived in New York with San Francisco air in all four tires.

Coast Tires carried the Essex car to victory in the Dealers' race on the new San Francisco Speedway, Sunday, December the 11th.

Coast Tires gave 30,000 miles' service on an 18-passenger Garford stage running daily out of Fresno.

Remember these facts the next time you buy tires—

Millions of dollars are spent in the east annually by California for tires. This money going out of the State benefits only the eastern concerns—pays eastern taxes, gives employment to eastern workmen.

The Coast Tire & Rubber Company is a California corporation; financed by California capital; employs California labor; pays taxes in California; keeps California money in the State.

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A DEPENDABLE and never failing 60-horsepower motor drives the New Seven-Passenger Studebaker BIG-SIX easily on high gear and without effort, at two miles an hour or a mile-a-minute. Its 126-inch wheelbase, with perfectly balanced chassis, gives to this car riding qualities that are truly remarkable.

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Motor Land

THE PACIFIC COAST MAGAZINE OF MOTORING



Hats off to Jordan

There has been a great deal of talk about bad times and readjustment of finances in the automobile industry of late, but the aspect of the new year is anything but pessimistic. Somehow the closing days of the year always give the howlers their chance to perform while the boosters take the stand when the new era steps in.

The automobile industry would be well off to have many other men such as Jordan, who answered the pessimists with a campaign of advertising that fairly swept out the foundations from under them. Not only that, with the advertising campaign came a telegram from "Ned" expressed somewhat in this wise: "I believe in the automobile industry. I believe that when the other fellow is howling hard times is the best time for the live ones to get busy. I have faith in my car and in my power to sell it."

A bombshell like that goes a long way toward stimulating the industry all along the line. The opening of the new year ought to bring a whole battery of such Big Berthas in sales talk as this.

Those Glaring Lights

Many of the motorists who are howling the loudest at the glaring headlights which they meet on the highways are themselves offenders of

the worst order. Before you throw any stones at the other fellow be sure that you yourself are in the clear. The purchase of a lens does not make the motorist secure against arrest for the violation of the anti-glare law. The adjustment must be correct and the candlepower of the lights must be under the maximum permitted.

Too often on the highways nowadays, too, is met the gentleman who forgets to fasten his lenses so that they are focused on the highway. One lens may have a side flash that catches the approaching driver while the writer has often seen cars where the lens was upside down, throwing a far worse glare than if there were no lens at all.

The clean-up on the headlight business must begin at home. Better see how you are yourself before you begin throwing mud at your neighbor!

The Proper Signals

It would try the patience of old Job himself to see the number of motorists

who ought to know better driving about the streets without giving the proper arm signals for stops and turns. Perhaps one out of every four will signal correctly for a right-hand turn. The proportion is worse for the left-hand turn, strange as it may seem. Most frequently for the left-hand turn the driver gives a stop signal.

Many an accident has been caused directly by misinterpretation or ignorance of the proper arm signals. Motorists who do not signal properly should be fined. After all, a fine is a wonderful stimulant to education in the law.

Traffic and Safety

The new year will undoubtedly see a decline in accidents as well as a more efficient traffic system in our cities. Education of the children through the public schools is a great step toward safety. The youngsters are the pedestrians and motorists of tomorrow, and school training in traffic signals and precaution will go a long way toward elimination of the lists of accidents in the Monday morning papers.

More efficient and more scientific handling of traffic will follow the "get-together" movement among the traffic chiefs of the country. The education of the youth of the country is one factor in the safety campaign; the perfecting of a uniform traffic system is another.



*A Waterfront View of
Penang, Malay
Peninsula.*

TOURING IN
FOREIGN
LANDS



*Mohammedan Mosque,
Ceylon, India.*



*In the tropical gardens
of Singapore.*

WHAT'S AHEAD?

A Forecast for 1922

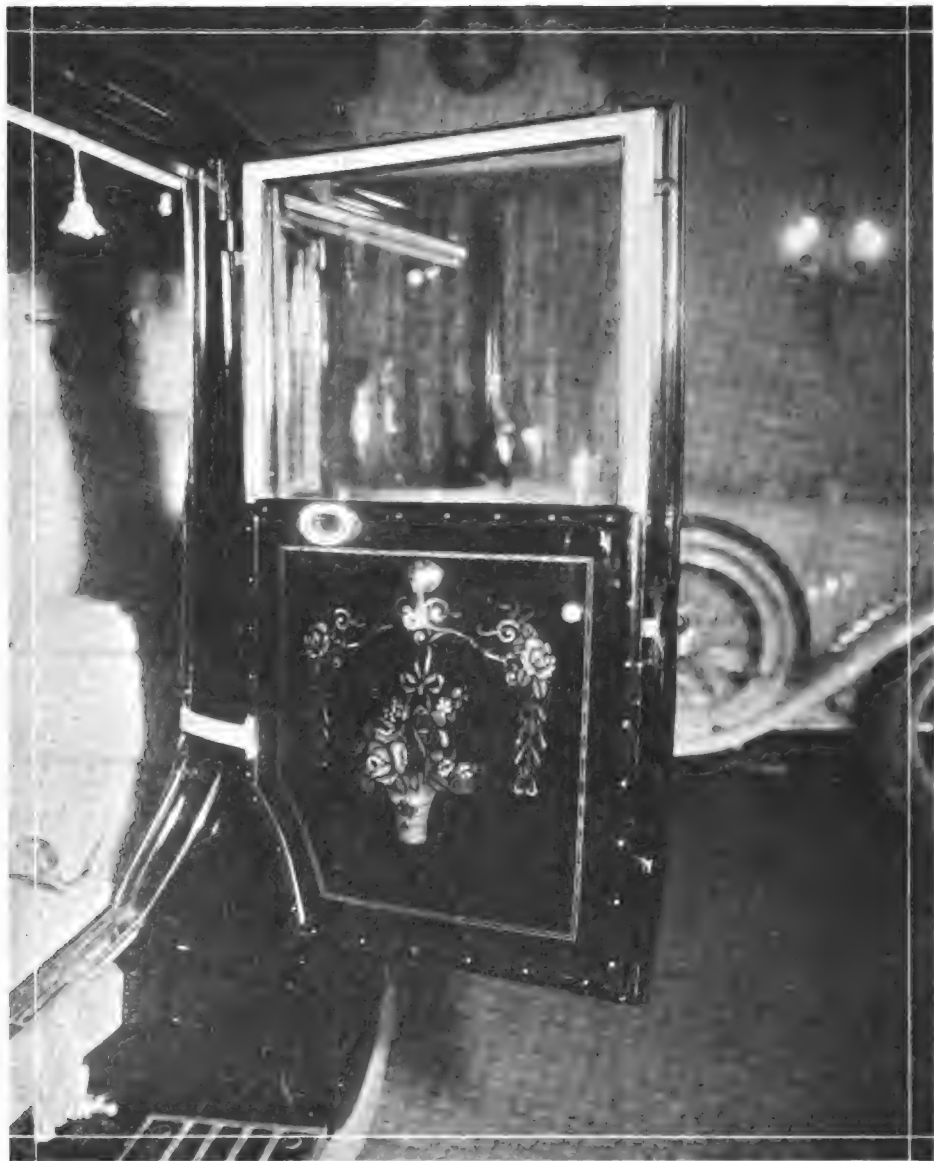
By HAROLD F. BLANCHARD

CHEAPER closed car bodies are a certainty. It may be confidently expected that during the coming year several manufacturers will produce cars selling for very little more than their open models. The first step in this direction is indicated by Essex Motors, in announcing a five-passenger coach, which sells for \$1,645, San Francisco. This is only \$275 more than the price of the five-passenger touring car, and yet this closed car model is \$590 cheaper than the standard sedan. This remarkably low price for a closed car has been achieved not by second rate workmanship or material, but by applying production methods to the body construction, and the principles found in the Essex coach will shortly be found in other closed car models. The reason that the average closed car costs \$800 or \$1,000 more than an open car on the same chassis is due to the fact that the closed car is built whereas the open car is manufactured. The same high speed production methods that are used in making cylinders, pistons and rear axles are employed in making open car bodies. But the construction of closed car bodies has never broken away from coach building tradition. The essential principles that have made the American automobile so good and so cheap have never been applied to closed car body construction before. With the exception of the Essex coach it may be said that closed cars are produced according to yacht building methods. The body is built up piece by piece. Workmen crawl under it and through it with saw, screw driver and tack hammer. There is much wasted labor because many awkward jobs are to be done. Tacking the material to the inside of the roof, for example, really requires a contortionist to do the job properly.

Assembled as Unit

In the Essex coach, however, much of this difficulty is eliminated. The roof is assembled as a unit at the bench, and the material applied to it; and the general lines of the body have been so simplified that a great deal of expense has been eliminated.

It is believed by some manufacturers that by the complete adoption of production methods to closed body construction that the price of closed bodies may be brought down close to the price for open jobs. If this is done, it is likely that the body will be made



The trend of body design. A handsome closed model by Brooke Ostruk with a mahogany door panel elaborately inlaid in wood.

in several pieces at the bench, where men may work rapidly and effectively, and these will be assembled in a few minutes to form a complete body. It is quite possible that these parts will be fully painted before they are assembled.

The underlying reason why automobiles can be produced so cheaply is found in the fact that there is a special machine for almost every article produced, and each special machine turns out a single part without interruption. These parts are assembled into units, such as the engine, transmission, steering gears, axles, etc., and then these units are quickly bolted together to form a complete car. As a consequence, very little man labor is required in putting the parts together, since every article is assembled by a specialist, and assembled under most ideal conditions. Because the engine is assembled on the bench and then placed into the car, it is not necessary for a workman

to crawl under the car to fit piston rings or pistons. Yet the latter perfectly describes body building methods at the present time.

Lines Will Be Straighter

It need not be expected that the prices of all bodies will come down. A certain class of buyers will always demand hand workmanship, just as a certain percentage of the public demands custom made suits. It may be expected that the bodies built according to factory methods will be the equal in quality and comfort of the hand made jobs, but on the whole they will not be quite as attractive in appearance. Lines will be straighter and curves fewer. However, this is not a serious disadvantage, because the same holds true of open body construction. One reason straight lines are so popular is found in the fact that it is cheaper to build bodies this way.

The public is demanding closed bodies. In 1919 closed cars com-

prised 10 per cent of the total production, and in 1920 this figure was 17 per cent. It is likely that it will increase largely in 1922. It is a fact that most people prefer a closed car, and the reason more people do not buy them is because they cannot afford them. As soon as the automotive industry offers the public closed cars at approximately the prices of open cars, it is certain that the closed car will exceed the open car in volume of sales.

Rigid Tests Provided

We are promised cars that will stand up even in the hands of a careless user, cars designed to require very little repairing—and when they do require repairing, it may be accomplished with vastly less expense because machines will be designed so that they can be repaired easily. This promise has been made by Norval Hawkins, of the General Motors Corporation, who goes on to say that “no new model will ever get into production in the future until it has been subjected to the most gruelling scientific tests—not block tests or cross-country advertising tours—but tests equivalent to the usage it would get at the hands of the most careless user during the normal life of the car. During these scientific tests, accurate records will be kept of wear, breakage, adjustments, etc., so that the dealer, the repair man, and the owner may have specific, accurate, dependable information regarding upkeep repairs and replacements.

“Furthermore, before a new model is put into production it must be carefully analyzed from the service standpoint. And this is what the General Motors Corporation has in mind. When the owner of the car finds that something has gone wrong with his machine, that he cannot repair without tools that he has in his kit, he knows automatically that he should take the car to the local dealer. If this man has the equipment to effect the repairs he makes them. But if the equipment he has and which has been specified by General Motors Corporation is inadequate for the work, he knows automatically that the repair of this particular part should be referred to a distributor.”

These advanced ideas announced by General Motors must certainly come in for general adoption throughout the industry, because General Motors is so large a section of the industry. For this reason, certain other policies announced by Norval Hawkins are of extreme interest to the owner, and it shows the beginning of a new spirit in the industry which must result in greatly increased pleasure and profit to the car owner.

Car Owner the Boss

First and fundamentally, the principle is laid down that every member of the automotive industry works for the car owner. The car owner is the boss, and factory executives are merely lieutenants to carry out the will of the car owning public. The car owner is the man who must be satisfied, first, last and always.

Looking at the matter from a different angle, the automobile industry is trying to buy the customers' dollars. Its currency is in the form of gears, cylinders, pistons and axles. The exchange must be mutually advantageous. Both sides must benefit. Honesty must be the basis of all transactions. If the customer tries to pass off a counterfeit dollar, the industry refuses it. And by the same token, if the industry passes off a counterfeit gear or a defective axle, the customer has a right to be incensed.

The General Motors Corporation, by the way, is intensively studying the service question. It is the ultimate aim of the company to supply repair parts at a great reduction from present figures. The manufacturer of spare parts will always have precedence over production of cars, regardless of how tremendous the demand for cars may be. It has been laid down as an unalterable policy that it is more important to keep the old car running than to build new ones. This is rather a new thought in the industry, and will do much to benefit the car owning public.

Flat Rate System Favored

It is predicted that the flat rate system will be used in every reputable repair shop in America within three years. For those who have not heard of this system, it should be explained that every repairing operation on the car has a definite price, determined by study and experiment. Grinding valves and removing carbon on a certain car might list at \$10. Putting in new pins and bushings in the steering mechanism might be \$12, parts included. The installation of a new rear spring might be \$20, including the cost of the spring. The total sum is \$42. If the customer should come to a repair shop to have these three jobs done, he would know beforehand what his bill would be. And consequently there would be no opportunity for dispute and no possibility of overcharging him. The figures would be standard and definite. The flat rate system is in use in many repair shops and service stations throughout the country, and the system is growing with extreme

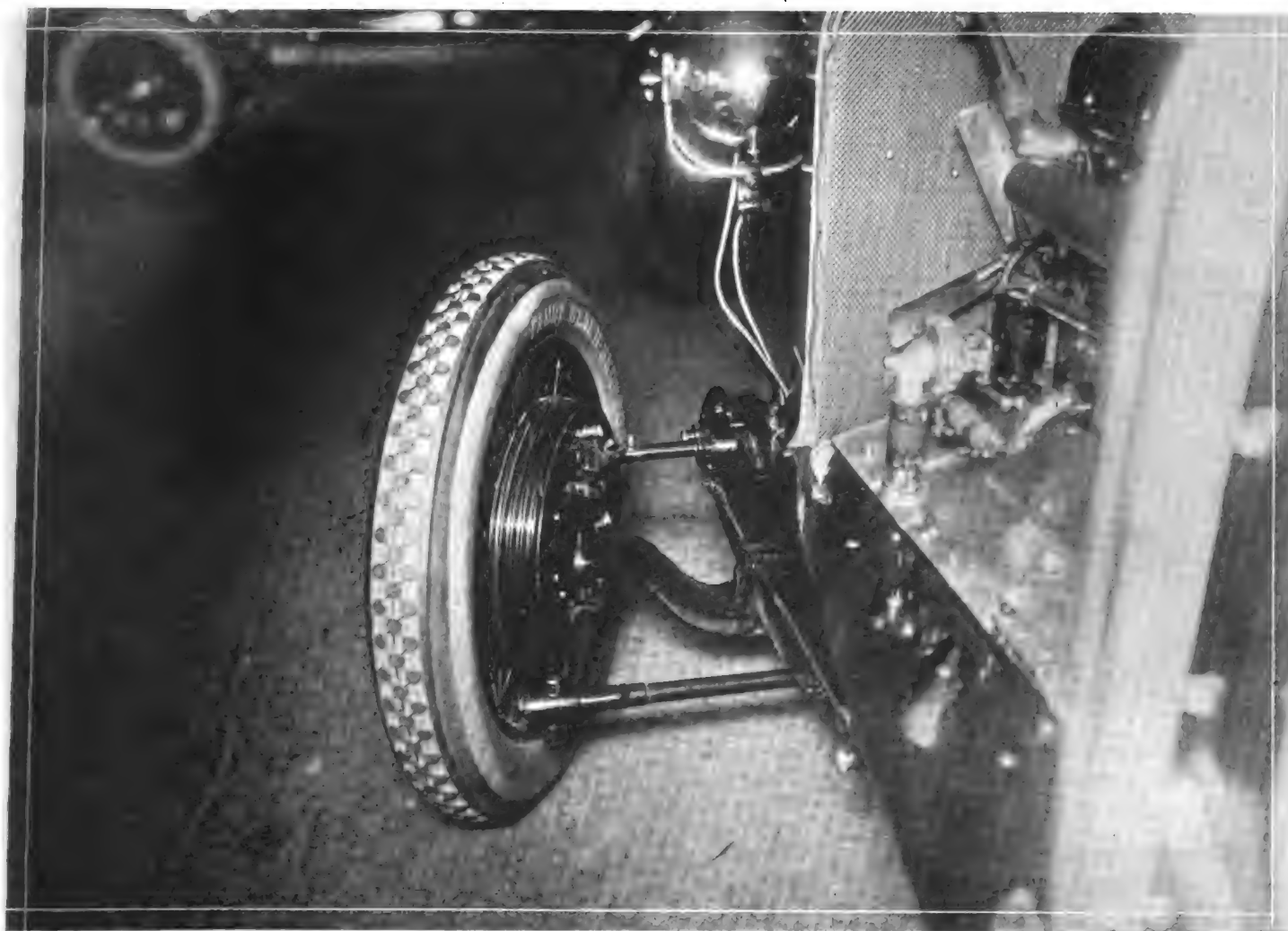
rapidity. It has been used in authorized Ford service stations for some time.

In a mechanical way it need not be expected that there will be any great surprises for 1922, although definite development along several lines will be seen. Some air-cooled cars will be announced. These cars will probably be on standard lines, although unquestionably they will be cheaper than any air-cooled car now in production in this country. There is a definite demand for well-built air-cooled touring cars selling for \$500 to \$1,000, and it is quite certain that such cars will be seen soon. In this connection it should be mentioned that General Motors admittedly is working on an air-cooled car for popular production, and other well-known companies are also experimenting. Extremely attractive and well-finished air-cooled cars are appearing in France, England and Germany. As a rule these machines are of the highest quality, and they are extremely comfortable, although their weight is less than 1,000 pounds. Their engines are about the same size as the standard motorcycle engine used in America. Europe is also producing many four-cylinder cars with tiny engines. These cars develop from 5 to 15 horsepower, and weigh from 700 to 1,500 pounds. They carry from two to four people. They will run 40 to 60 miles on a gallon of gasoline. Only one car of this type has been produced in America, and that is the Moeller. The chassis of this car sells for about \$2,500. The car is designed for export, and it is not likely that many will be purchased in this country at this price. There is a demand, however, for cars having upkeep expense as small as a motorcycle, provided these cars might be purchased for \$300 to \$400. There is no evidence that any manufacturer is working on this problem, but inasmuch as there is a demand, it is logical that some company will soon attempt to meet it.

Steam Car Development

Cars equipped with overhead valves and overhead cam shafts will increase slightly in popularity. Better hill climbing ability and greater speed, as well as better fuel economy, will be characteristic of 1922 American cars.

The steam car is increasing in numbers. Last year there was only the Stanley. Since that time several machines have been announced, and others have been promised. Among those announced may be mentioned Coats Steamers, Inc., Indianapolis, Indiana; The Standard Steam Car Co., St. Louis; American Steam Truck Company, Chicago, Illinois.



Close up of the front wheel braking system used on the Hispano Suiza.

Steam car development is likely to be divided into two schools, just as gasoline car development has divided into air and water cooled car schools. It seems likely that steam car design will proceed in two different directions: one school will follow gasoline car practice, and the other will include cars developed on strictly new lines. The latter might be termed the steam car school.

Steam cars built on gasoline car lines will have the engine mounted under the hood; to the rear of the boiler and in unit with it there will be a two speed and reverse transmission. The engine will drive the rear wheels through a propeller shaft and bevel gear.

In the steam car school, the engine will either be mounted on the rear axle, being geared directly to the differential, or else the cylinders will be placed in the wheels themselves. There is so much to be said in favor of both that it is likely that the question will never be settled.

Lighter Cars Effectuated

Somewhat lighter cars and development in spring suspension can be

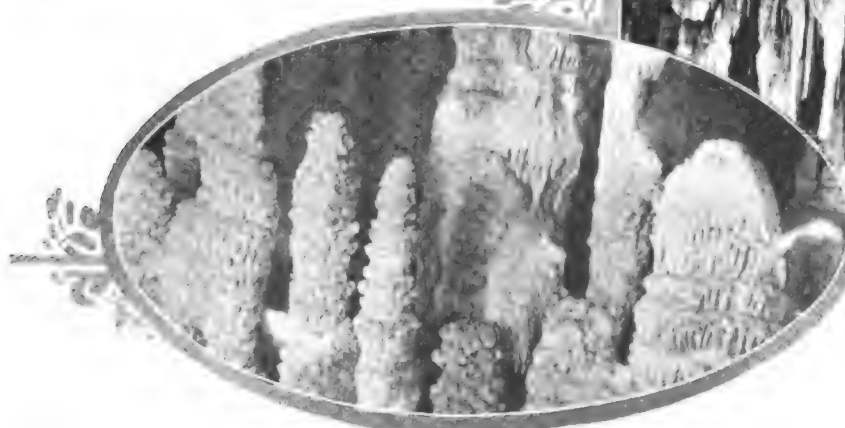
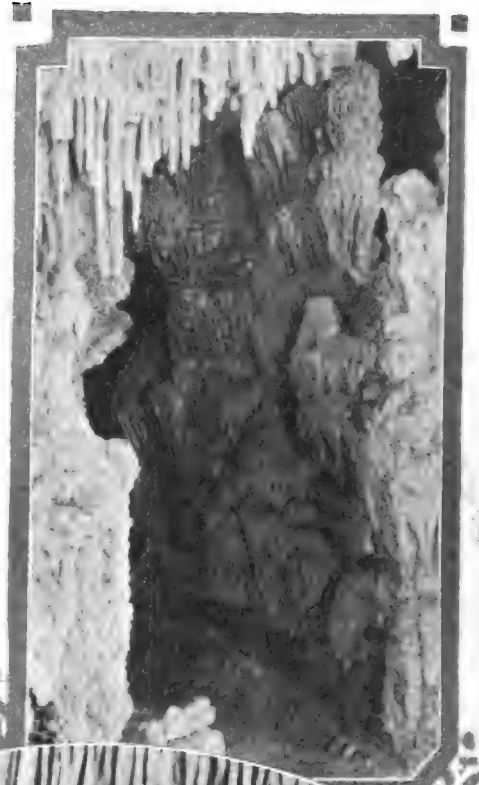
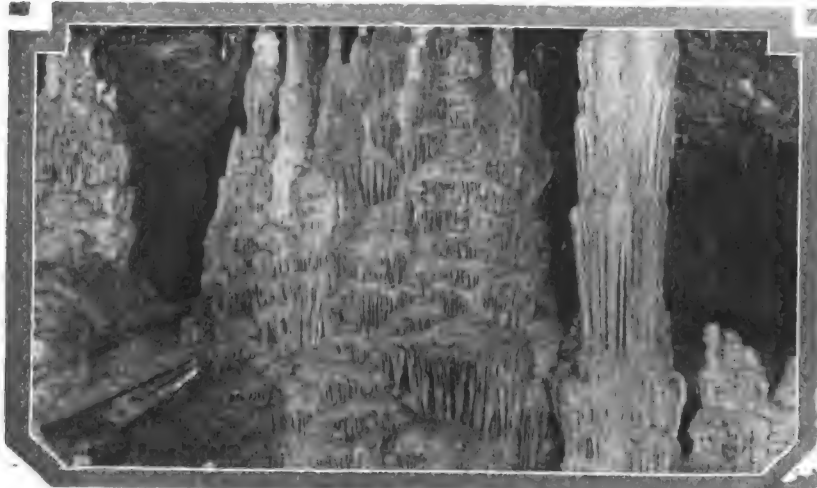
looked for. The tendency of the automotive industry all over the world is to make cars lighter, because it is gradually being found that weight may be lopped off here and there without reducing the comfort or the ability, and of course a lighter machine is more economical and easier to drive, and often costs less to build. From the variety of spring designs that have been brought out by some of the best makers in Europe in the past few months, it is evident that the ideal spring has not been found. Briefly, the objection to the half elliptic is that it adds considerable unsprung weight to the axles, while there are several objections to the cantilever. The cantilever often causes objectionable side sway, and some additional means must be taken to handle the driving strains produced by the wheels. With half elliptic springs, it is common practice to permit the springs to carry these strains, but it is not so feasible to do this with a simple cantilever. For this reason, and also to eliminate side sway, various modifications of the cantilever are in evidence. Quarter

elliptic springs and dual quarter elliptic springs of various styles are also seen. An additional objection to a quarter elliptic or cantilever front spring is found in the fact that if the main leaf breaks, the steering gear is useless unless distance rods are employed to hold the axle in place. The quarter elliptic and cantilever have a distinctive advantage in that the unsprung weight on the axles is a minimum, and it is likely that these two designs will be seen in increasing numbers with all sorts of modifications to eliminate side sway and overcome other difficulties. In the effort to bring unsprung weight to a minimum, one French car has appeared without axles. The wheels are pivoted directly on short levers, which are mounted on heavy coil springs. By this construction, the unsprung weight is very small, and the coil spring is said to give satisfactory action inasmuch as it has a friction damper. In this country two different concerns have minimized unsprung weight by eliminating the axles by the use of dual transverse springs front and rear. At

(Continued on page 34)

Lehman Caves

*A new Underground Wonderland to be found six miles west of
Baker, White Pine County, Nevada.*



THE SPIRIT OF MOTORING

"It Is the Cosmic Urge"

By VONARD FRASER

WHEREIN lies the Spirit of Motoring? Is it the offspring of autocracy or democracy? Does it find its being in selfishness or in altruism?

We talk a great deal about the lure of speed, the call of the open road, and the necessity of the motor car. We hear a great deal about the latest development in the mechanics of the automobile and we wander around the displays at the automobile shows with open mouths, expressive of the wonder which we feel.

Where should we look for the Spirit of Motoring? At the auto show? On the speedway? In the country, or at the market place?

A few years ago a member of the newspaper fraternity conceived the idea of a contest in which the participants who, as a matter of course, were the long-suffering public, should write short essays on the subject of "Why does a man hit at a ball?"

In baseball, in golf, in tennis, in football, hockey, marbles and a score and more of other sports that occupy the attention of the "fans" of the country, the ball is the all-important object. The use of the muscles, combining manual strength with manual dexterity, to propel the ball as far as possible or in such a direction as to answer some problem of play must have some psychological reason, and this newspaper contest was originated with the idea of solving for the psychologists this perplexing phenomenon in the field of sport.

The Answer

The winner of the contest was a woman and her answer was the cryptic sentence: "It is the cosmic urge!"

This, too, must be the answer to the query presented at the outset of this article. The Spirit of Motoring is the Cosmic Urge. It is not the prize at stake entirely that causes a race driver to take his life in his hands on a mad dash about the speedway. It is the cosmic urge. Haven't you felt that strange phenomenon of increased power when you sat in the driver's seat of a motor car and stepped on the gas? Haven't you had the thrill that comes of speed, the whip of the wind against your face and the purr of the healthy engine?

That is the cosmic urge!

When mankind in days long since tamed the noblest of the brutes, the horse, and made him a servant to carry him from place to place and

till the field and transport the crops, he must have felt that self-same thrill that his descendant does today when he feels the power he has under his control to be unleashed as he wills and to be leashed again.

Over the hills in the California springtime! What happiness could be more complete! And every season has its charm out here in the West where our touring days include every day in the calendar and where a motor car is as important a piece of our lives almost as the shoes to our feet.

An Uncanny Thing

The Spirit of Motoring is an uncanny thing. It gets into the blood. The children are scarcely able to toddle around before they're pleading for a toy motor car. I wonder if in the days of the coach and four the young blood of New England and Old England asked Santa Claus for a miniature edition of the lumbering bus that meant transportation to our stern old grandfathers and great-grandfathers? If they got it the motive power was in their own little bodies and it was a "self-moving" vehicle after all!

Have you ever imagined our present-day world without its automotive transportation? Hark back to the days before the bicycle and see how slow according to the standards of today the old world moved. A journey of 20 miles was considerable of a journey in those days while now—less than an hour's ride, on wings of gasoline and rubber! And with the advance of transportation has come a greater efficiency of labor, more skillful mechanics, a higher type of engineering. It has invaded even the fields of clerical work and it has developed a faster, surer method in the handling of business. The mind of a man keeps pace with the speed with which he moves or can move from place to place.

Turn to the records of the world war and see what the Spirit of Motoring accomplished on the fields of France. The American doughboy was looked upon as the supreme type of efficiency. Why? Because he had been schooled by the inventive and mechanical development of his country into a state of mind which allowed him, which forced him to act and think quickly. The American tank, the American truck and the American motor car in France made a wonderful record, but it was but a part of that

accomplished by the individuals themselves who were also a product of a mechanical age in a nation which had developed the mechanical aids of mankind to their furthest extent.

Travel Best Educator

Travel provides one of the greatest of opportunities for education of the youth. Books, after all, are but the digest of ideas of different men in different places, or the story of their development. Contact with the individuals whose ideas were developed into books would be more educative than the mere perusal of the story. So in travel the tourist is educated, his mind is broadened, his sphere of mental consciousness is expanded and he becomes not the dull mirror of life that has been but the red-blooded activity that is the life of the age.

No man can travel and not have his sense of the relationship of men and things developed. No man can mingle with various types of his fellow-beings without absorbing fresh views of life, and in so doing he is becoming more and more democratic, more and more charitable, more and more a man. If the bolshevist or the anarchist were made to drive about the country in a motor car, if these individuals were forced to commune with others of their kind of diverse ideas and diverse planes of life, if they were compelled to see more of what life really is than that bounded by the vision of themselves and their small body of companions they would not be bolshevists nor anarchists more.

The Spirit of Motoring has much to do with this extension of the education provided by travel. It has given us out here in the West the union high school and its increased efficiency and improved teaching. The motor bus was the key to the small town problem of high schools, and churches have fallen in line with the times and have adopted the motor bus as the key to their problem of bringing the young children to the services.

Contact With Nature

L. H. Bailey in "The Holy Earth" writes of the inspiration which contact with nature develops in mankind:

"The good spiritual reaction to nature is not a form of dogmatism or impressionism. It results normally from objective experience, when the person is ready for it and has good digestion. It should be the natural

emotion of a man who knows his objects and does not merely dream about them. There is no hallucination in it. The remedy for some of the erratic 'futurism' and for forms of illusion is to put the man hard against the facts.

"The backgrounds of life are important. The life of every one of us is relative. We miss our destiny when we miss or forget our backgrounds. We lose ourselves. Men go off in vague heresies when they forget the conditions against which they live.

"The backgrounds are the great unoccupied spaces. The backgrounds are the sky with its limitless reaches; the silences of the sea, the deserts with their prismatic colors; the vast mountains; the elemental simplicity of the open fields; and the solitude of the forest. These are the facts and situations that stand at our backs, to which we adjust our civilization and by which we measure ourselves."

Were it not for the modern motor car and its presiding genius, the spirit of motoring, man's contact with these backgrounds of nature would not be continual. The ease with which the man of today may step out from the busy noisy life of the city and seek "the forest primeval" within the space of a few short hours goes far toward developing a sense of the fitness of things which argues well for the future of our country.

Ford Looks Forward

Henry Ford, maligned often, praised sometimes too much and sometimes too little, has shown a prophetic ability to look into the future and observe what lies in store. He has felt the democracy that lies in the motor car; he has foreseen the need for the widening of the vision of the individual citizens of this country, and he is still looking forward to a day when every man will have at his bidding the wings of the motor that will keep him in touch not only with the marts of trade, with the ant hills of industry, but with the forest backgrounds where mankind may commune with nature and find in the solitary stretches that subtle something that makes humanity the better.

"To him who in the love of Nature, holds
Communion with her visible forms, she
speaks

A various language: For his gayer hours
She has a voice of gladness, and a smile
And eloquence of beauty; and she glides
Into his darker musings with a mild
And healing sympathy, that steals away
Their sharpness, ere he is aware. . . .
Go forth under the open sky, and list
To Nature's teachings, while from all
around—

Earth and her waters, and the depths of
air—

Comes a still voice—

. . . The hills,
Rock-ribbed and ancient as the sun; the
vales

Stretching in pensive quietness between;
The venerable woods; rivers that move
In majesty, and the complaining brooks,

That make the meadows green; and, poured
around them all,
Old Ocean's gray and melancholy waste,—
Are but the solemn decorations all
Of the great tomb of man!"

When next you step into your chariot of the age, your modern motor car, remember that it represents more than any other single thing the spirit of the age! It brings the farmer to the edge of the city and gives the city resident the pleasures of the farm. It brings the Yosemite within a single day's journey. If you have come from the East and long for a baptism of snow, step into your motor car and within a few hours you will be in the land of winter. If you find the cool breezes of the bay too cold, run down to Monterey, California's ancient capital, and bask in the equable clime that is hers.

The motor car is the pleasure wagon for the entire family and the spirit of motoring hovers over not only him who drives. The passenger in the back seat may feel the same thrill. Power, speed, comfort, luxury, life itself lie in this development of an age of invention and this strange genius that is the embodiment of the necessities and pleasures of modern motoring points out the way, the way to development, the way to happiness, the way to democracy.

The Spirit of Motoring is the Cosmic Urge!



CALIFORNIA'S ROAD TEST

Maintenance Chief Worry of Engineers Now

THE work of destroying the test highway at Pittsburg has proceeded to the point where maintenance is a serious factor. So rapid has been the disintegration in spots during the last few days, that the operation of the trucks used to destroy the road has been considerably hampered.

The necessity for maintenance in the test highway is not unlike that found on all of our highways and this is being observed scientifically. From these observations many new



Scene on the Test Highway at Pittsburg, Contra Costa County, California.

ideas undoubtedly will be developed that corrective measures may be employed in future construction work.

Already much of importance has been learned, although a careful compilation of data now collected will need to be made before a definite report can be issued.

Atmospheric Changes

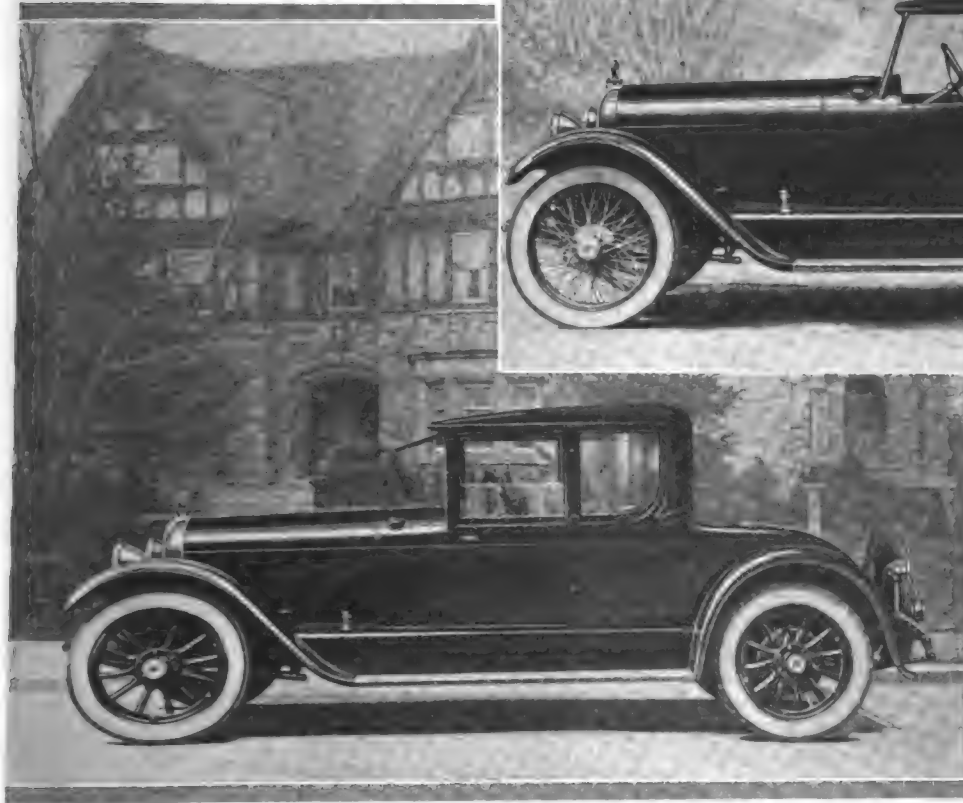
Atmospheric changes produce stresses in concrete, and if they are of any magnitude they become destructive. Just how much of the deterioration of pavements has

been due to temperature changes and how much to traffic has long been a

(Continued on page 24)

MOTOR GOSSIP OF THE MONTH

By THE OBSERVER



TOP—The Five-Passenger Fox Touring Car.
BELOW—The Three-Passenger Coupe.

The Fox

THE Fox air-cooled car, manufactured in Philadelphia, is to make its debut at the national automobile shows. There will be three models—five-passenger touring car, five-passenger sedan and three-passenger coupe, all with 132-inch wheel-base.

The engine of the Fox is of exclusive design and is cooled by forcing air from the front by means of a Sirocco type blower fan mounted on the crank shaft. A tremendous amount of air is blown through an aluminum housing over the cylinder heads and down through the vertical machined cast-iron cylinder fins. The large amount of air handled by this method of cooling combined with a relatively thin cylinder wall construction and exceptionally large valve area results in the engine developing 50 horsepower.

The power plant is of unit type construction. The engine is valve in head with six cylinders cast separately and with removable heads. The bore is $3\frac{1}{4}$ inches and the stroke 5 inches.

Rocker arms are oil lubricated from a reservoir contained in the rocker arm pin, which is hollow, and wick fed to bearing surfaces. Pistons are "long" aluminum alloy with three Pedrick one-piece cast-iron rings all above the wrist pin.

The crank shaft is $2\frac{1}{2}$ inches in diameter with seven bearings, forged from a solid bar of alloy steel and drilled for lightness. The seven bearings are bronze back babbitt lined. The cam shaft is fabricated from a solid bar of steel, rifle drilled entire length to supply oil under pressure to four exceptionally large phosphor bronze bearings. The transmission is Fox exclusive design with Borg and Beck single plate 12-inch clutch.

Lubrication of all engine bearing surfaces is by pressure feed oil system. Chassis bearing points are lubricated by oil. The Fox is equipped with the Westinghouse generator and starter, Bosch magneto, Zenith carburetor, and Stewart vacuum gasoline tank. The battery is Exide, 6 volts, 120 amperes. Both the rear and front axles are Fox exclusive design. The rear

axle is a semi-floating type with spiral bevel gears mounted on Timken roller bearings and carriers. The drive shaft is tubular with Spicer universal joints. Hotchkiss drive is used. The frame is molybdenum pressed steel with 6-inch channels and three cross members, insuring rigidity and strength.

Both front and rear springs are semi-elliptic of manganese steel, underslung; the rear 60 inches long.

The service brake operates on the transmission and the emergency brake is internal expanding on drum of rear wheels. The Fox will be equipped with tires 32 by $4\frac{1}{2}$ inches. Purchasers will have the choice of either wire, wood or disc wheels with no additional charge.

The equipment includes Boyce Moto Meter, especially made for the Fox Air-cooled Engine, Watson stabilators, extra wheel or rim and cord tire, rear view mirror, window shield cleaner, backing up light and automatic stop light.

The Dixie Flyer

The Dixie Flyer, which is equipped with a $3\frac{1}{2}$ by 5 Herschell-Spillman engine, disc clutch and three speed transmission, is distinguished by unusually complete equipment, including Gabriel Snubbers front and rear, bullet side lights, eight-day clock, Moto Meter, Macbeth lenses, in addition to the usual ammeter, speedometer and oil pressure gauge. Optional colors are offered on all models, and all models are equipped with magnetos. The five-passenger sport touring car is finished

in Spanish leather and in addition to the usual equipment, has a spotlight, muffler cut-out, and wire wheels.

Hanson Six

A new six-cylinder car which sells for less than \$1,000 is announced by the Hanson Motor Car Company, of Atlanta. The new car will be built in Detroit, and the capital of the company will be increased from \$25,000,000 to \$50,000,000. It is proposed to absorb several part plants in the Detroit district.

New Cord Tire

The Seiberling Rubber Company has been incorporated in Delaware for \$55,000,000. An entirely new cord tire built along radically different principles will be developed, and it is said that this can be produced at a lower manufacturing cost. The company will specialize on pneumatics for automobiles and trucks. The new company will have its general offices in Akron, and will operate two tire building plants, the Lehigh factory at Newcastle, Pennsylvania, and the Portage plant at Barberton, Ohio. The plants have a combined capacity of 5,000 tires and 6,000 tubes. The incorporators include Frank A. Seiberling and Charles W. Seiberling, and other former Goodyear officials. The company will issue 50,000 shares of preferred stock, at \$100 a share, and 500,000 shares of common at no par value.

Air Cooled Car

The Automotive Corporation, Toledo, Ohio, is planning to produce a four-cylinder, air-cooled car, weighing 1,000 pounds, and having a 95-inch wheelbase. It is to sell for \$475, and will be ready in January.

Ford's Plans

Henry Ford is planning to develop hydro-electric power on a large scale in various sections of the country. This is borne out by his bid for the Muscle Shoals property and by the fact that he will soon have in operation a power plant on the Hudson River at Green Island, near Troy. Ford's engineers have also made a survey for the creation of a great lock system along the upper Mississippi, and he said recently that the country has enormous resources in unused water power which should be put to work. There is a fall of 400 feet in the Mississippi River between St. Louis and New Orleans, and not a dam on the river. In speaking of Muscle Shoals, he said: "If the Government will let me go to work at Muscle Shoals, I will establish a great aluminum plant, in which aluminum will not only be extracted but manufac-

tured into machinery parts. I will establish plants in which cotton will be spun and woven into floss. I will put to work every horsepower that can be wrung out of Muscle Shoals, no matter how many plants it will take to consume it."

It is known that his water power plans are closely linked with his ideas of farm life, when all arduous work shall be performed by machinery. He also has in mind the development of freight transports on inland waterways, and he is considering a plan to establish a packet line between Ironton, Ohio, and Paducah, Kentucky, in which a new type of river steamer will be used. These water lines could be operated in connection with his railroad.

Henry Ford has always been interested in power development. His power plant in Detroit has some of the largest gas engines in the country in it. His interest in this line of activity is unquestionably due to the fact that when he was a young man he spent several years working as an engineer in a power plant.

Nash Six Announced

A new six-cylinder Nash is announced. It has a more powerful emergency brake on the transmission, accurate gasoline gauge on the dash, low front seat with broad cushions, parking lights on cowl, new curtains, pocket in left front door for tools. Delco starting and lighting and ignition are used, and the spring suspension has been re-designed.

Tire Guarantee Abolished

The tire guarantee has been eliminated. According to the tire manufacturers of the Rubber Association of America, the following standard warranty has been adopted:

"We do not guarantee pneumatic automobile tires for any specific mileage, but every pneumatic automobile tire bearing our name and serial number is warranted by us to be free from defects in workmanship or material.

"Tires claimed to be defective will be received only when all transportation charges are prepaid and when accompanied by this company's claim form duly filled out and signed by owner. If, upon examination, it is our judgment that the direct cause of the failure of the tire to render satisfactory service is attributable to faulty material or workmanship, we will, at our option, either repair the tire or replace it for a charge which will compensate for the service rendered by the returned tire, based upon its general appearance and condition.

"Pneumatic automobile tires in which a substitute for air has been used, tires used when not inflated to the pressure recommended by us, used under loads in excess of those recommended by us, used on wheels out of alignment, abused or misused, used on rims other than those bearing these stamps (—), (—), (—), or which have been injured through accident or design, are not subject to claim hereunder.

"This company does not authorize any dealer or agent to make any additional guaranty or warranty."

Milton Speed Champion

Jimmy Murphy in a Duesenberg set a new world's record on the San Carlos Speedway in San Francisco on December 11 when he won the 250-mile international sweepstakes by averaging 110.6 miles an hour. Murphy ran as high as 113 miles per hour and he went the distance in 2 hours, 15 minutes and 11½ seconds. Tommy Milton ran second, Eddie Hearne third, Harry Hartz fourth, and Ralph de Palma fifth.

Tommy Milton, by winning second place, acquired sufficient points to make him speed champion for the year. Ralph de Palma's poor showing was attributed to engine and tire trouble.

Durant Prices

The Durant Motor Car Company, of Indiana, has announced that the six-cylinder Durant will sell for \$1,600 as a roadster; for \$1,650 as a touring car; \$2,250 as a coupe; and \$2,400 as a sedan.

Produce for Auto

It will soon be possible to barter farm produce for a Ford. It is understood that the Ford Company is establishing a food produce bureau which will permit the farmers to exchange their produce for Ford cars, trucks and tractors. Ford dealers will be authorized to barter directly with farmers, taking produce at current market prices.

Four-Wheel Brakes

In a recent test a car was stopped from a speed of 62½ miles an hour in the amazingly short distance of 93½ feet. The car was a Chenard-Walker, equipped with brakes on all four wheels. But the fact that it has a four-wheel braking system only half explains the remarkable record. The braking system is equipped with two new and radical features which account for the splendid performance.

(Continued on page 30)

WHERE DO THEY GO TO?

The Life of an Automobile is a Tale of the Pocketbook

WHERE is that shiny new car that you bought four or five years ago, now? Speaking more generally, what becomes of the old ones; where do they go to?

The tale of the life of an automobile is a tale of pocketbooks. As a new car loses its usefulness and beauty, it passes from the original owner to a man with a more slender pocketbook, who is willing to put up with any imperfections it may have. Then a time arrives when the car has aged sufficiently in his hands so that he no longer regards it as a desirable piece of property, and he sells it to a man who is one step further down in the scale of pocketbooks.

There is an end to everything, and an automobile is no exception. Eventually, the car becomes so decrepit that its owner does not want it, nor does anyone else want it. It cannot be sold as a going vehicle. Therefore, it becomes junk. In many cases, the car may be sold as junk to some concern which makes a business of tearing old cars to pieces and selling the parts, but if it cannot be sold thus, it may be offered to a regular junk man who will be able at least to buy it for the scrap metal in it.

The Personal Factor

The moment when an automobile becomes junk varies. The personal factor enters very largely into the definition of the term. As an example, a well made old car may be running splendidly. Then unexpectedly some serious defect develops. Perhaps a new set of gears are required in the transmission. Perhaps a new cylinder block is required. At any rate, let it be assumed that some new repair part costing at least \$100 is essential to the continued operation of the car. Perhaps, to complicate matters, a new set of tires is needed. All these expenses may total not less than \$300. Yet, assuming that these repairs are made, the market value of the car in going condition is perhaps not more than \$200. Clearly, therefore, to put the machine in marketable condition means a loss of \$100. On the other hand, if the car is sold to a scrap metal man it will bring, say, \$50. And if it is sold to a concern specializing in second hand parts, it may bring as much as \$200 or \$300. If the owner uses poor judgment in coming to a decision, he may repair the car and stand the loss, thus postponing the day that the car becomes junk. On the other hand, he may realize that the most profitable

course is to sell the car as junk without further delay. Therefore it is plain that the personal factor has a lot to do with defining the word junk when applied to an automobile.

Interesting Business

Ripping old automobiles up and selling the parts is a business full of interest. Every part of the car is turned to some use. Some of the parts are sold as complete units, and among these may be mentioned engines, transmissions, steering gears, axles, etc.; and other parts are completely disassembled and sold piece by piece. This is true especially of the more popular cars. Engine equipment, such as carburetors, coils, distributors, generators, starters, etc., are sold as units.

When an old car is purchased, it is taken apart and the various parts segregated about as follows: Top and side curtains, windshield, upholstery, upholstery springs, cushions, storage battery, lighting generator, starting motor, magneto, engine, carburetor, gasoline tank, fuel tank, radiator, hood, steering gear, steering wheel, clutch, transmission, universal joints, drive shaft, rear axle, front axle, springs, wheels, demountable rims, tires, body, frame, fenders, lamps, speedometer, oil pressure gauge, ammeter, etc., grease cups, wheel hubs, tools, special equipment including bumpers, shock absorbers, rear view mirrors, windshield cleaners, trunk racks, etc.

Individual Parts Sold

Engines and transmissions for popular cars are also frequently taken apart and the individual parts sold. It is only by actually working in this business that the degree to which different parts are interchangeable among different cars is realized. For example, on one very well-known make of machine, the crank shafts are interchangeable on five different yearly models. And the transmission shafts on this model also fit several other makes of cars, including a light truck, although this transmission is not usually considered in the assembled class. It is only by handling parts that the extent of interchangeability is fully understood. An engine may be completely re-designed and be totally different in external appearance and yet the crank shaft may remain unchanged, as in the case just cited. In another instance, the cam shaft might fit an old series of cars.

The fact that so many machines are assembled from standard parts makes the job easier because so many cars employ the same motor or the same clutch and transmission, etc.

To give a clear picture of the ramifications of this business, let us consider the case of the man who bought a runabout which had been badly burned from one of these concerns. The machinery was in excellent shape except for some details in the electrical equipment, and the shell of the body was intact. The top and upholstery, however, had been burnt off, the windshield glass was missing, and there were no tires. The car was a year old, and had listed at \$1,500. The man who bought it had a taste for mechanics and planned to fix it up himself in spare moments. He paid \$200 for the machine. This included a complete set of second-hand tires, spare rim supplied from stock, and a storage battery, also supplied from stock. The concern then sold him everything he needed for rebuilding the car. A cushion was found which fitted the seat perfectly, a piece of upholstery was selected which was suitable for tacking onto the back of the seat. This upholstery was complete, stuffed and tufted and packed with burlap so that it was only necessary to tack it in place. A back spring to be placed under the upholstery was also obtained from stock. After some search a suitable top was found, and this was purchased. Windshield glass was obtained at a fraction of its cost when new. A coil, switches, speedometer, oil gauge, vacuum tank and other incidentals were purchased. The total bill for all this material was less than \$50.

A Clear Example

To further illustrate the function of one of these concerns, take the case of the man who had a fine old four-cylinder car, worth about \$250. One day, through carelessness, he burned out a connecting rod bearing, which punched a hole in the crank case. To repair the engine would have cost at least \$100. Instead of going to this expense, however, he made a deal with one of these concerns; he traded his broken motor for a good one of the same make and model, paying \$30 to boot. There are many instances of this sort. It is cheaper to buy a motor from one of these concerns, in fairly good condition, than to overhaul the old engine.

(Continued on page 32)

LIGHT CARS AND AUTOMOBILE COMFORT

The Evolution of the Motor Car

By ELI BOMOTUA CINAHCEN

ONE of the changes that has accompanied the evolution of the automobile from a rich man's toy to an intimate servant of people of all classes has been the great proportionate decrease in the number of men who employ chauffeurs and an increase in the number of owner-drivers.

During the early years of the automobile and until quite recently, almost all men who could afford it employed a driver. They might occasionally take the wheel themselves, but they did not have the time, and in many cases the skill, to do the tinkering that was necessary to keep a car in smooth running condition.

To some extent the change at first was brought about because of the scarcity of men and the high wages during and since the war. Many men who could afford to employ drivers at the old wages could not do so when the big increase came. They had to choose between driving the car themselves or going without, and it was natural that they should choose to drive their own cars. This forced upon them a better realization of the pleasure of driving, a realization which has done much to make the change permanent, now that wages are dropping once more.

But of far greater influence have been three other factors.

The first is that the moderately well-to-do man who can afford to spend so much money and no more on his automobile has learned that if he drives himself he can afford a far better grade of car than if he has to put part of his money into wages for a chauffeur, so we have seen considerable numbers of such men discarding their chauffeurs and buying better grade cars for their own driving.

The second factor has been the increase in the number of car owners who cannot afford a machine, except by carefully watching the expenditures in connection with its use.

The third and real factor has been the great improvement in cars, which makes them far more trustworthy and far less likely to need repairs and tinkering. The care of a first-class modern car calls for much less effort and less knowledge of mechanics than was the case even two or three years ago. Some of the latest models are so free from need of adjustment and care that a man has little to gain from the employment of a chauffeur, excepting relief from the actual work of driving.

The modern car also makes driving far less work and far more a pleasure than was the case a few years ago.

"Dependability" is the word that best fits the car of today, and it is proven by the ability of the average automobile to keep continually functioning.

The car of today as manufactured in America offers a satisfying range of speed on high gear, the increase or decrease of which throughout the range is best expressed by the term "flexibility," which makes for ease in driving.

This flexibility is further proven by the easy way the present-day car will respond to every demand of the driver without coaxing. Unusual skill is no longer necessary to "hold it on the road." This improvement may be due in part to the improved roads.

This "roadability" has lessened the nervous strain which comes from petty annoyances, and a man may now drive all day without undue fatigue, something impossible in the old days when a car had to be watched constantly; in fact, nursed along and steered every inch of the way.

Increased Wheelbase

This is in part accounted for by the increasing of the average wheelbase. On 23 cars manufactured in 1912, which are still being built, the wheelbase averaged 118 1-3 inches. On the same cars this year the average wheelbase shows an increase of 6 inches, which makes it 124 1-3 inches. With the increase in wheelbase there has come a lowering of the center of gravity, minimizing the tendency to skid and tip over. In many cars this tendency is again lessened by a brake equalizing mechanism, which prevents a brake being applied to one wheel before the other, and produces an absolutely even pressure on both wheels at the one time, which makes for ease in control even on slippery pavements.

Each year has seen, and will see, refinements in design of clutch and gears which made the shifting of gears easy and certain.

Then, in the car of today, accessibility and simplification of parts makes for assurance of one's ability to take care of trouble when it appears. There are many examples of accessibility on the average car. In most cases, to remove the axle shafts, the hub caps are taken off and the shafts pulled out—nothing else need be distorted. In many cases, one need only raise the

floor board and remove a few nuts from the cover plate by the gear box in order to inspect the gears.

In recent years inventors have worked at insuring easy starting, even in the coldest of weather, and thus eliminate the last of the serious troubles of the driver.

But it is in the light-weight cars that manufacturers now have under way that it will be possible to produce a car almost ideally constructed for owner-driving. In the light car of the present, here in America as in England, the home of this type of car, there have been combined many features which almost completely eliminate work and trouble in driving and in care, while retaining and increasing all the pleasures that it is possible to have.

This tendency towards light car construction is at its height in England and on the continent, and is now receiving attention in America. Manufacturers are beginning to realize that cars weighing under 1,200 pounds complete can be so built that they will carry four people comfortably and have the advantage of being more economical than larger machines. This trend in America is due in part to the fact that other problems which have heretofore held the attention of engineers have been in part answered, and the question of economy and lightness must now be considered.

At present, the fact Europe is leading us in this type of construction may be accounted for by the exceedingly costly gasoline over there.

Production methods abroad are such that there is more hand labor used than in this country, and there is no building of the assembled machine. Each manufacturer makes nearly every part, which means that the price must be high. Therefore, if the price is to be reasonable, the machine must be small.

According to Maurice Olley, in the *Journal of the S. A. E.*: "In England there are no accepted standards of design. The only two standards of practice are speed and economy. Until recently there were many single cylindered cars. Now these have disappeared, but an engine can have two, three, four, five, six, or eight cylinders; it can be air or water cooled, horizontal, vertical, Vee, or radial. The transmission can provide two, three, or four speeds, or, as in a number of small cars, drive by friction discs and gears or chains to the rear

axle. Chain propeller shaft, or V-belt, Hotchkiss drive or torque tube, differential gear or none, rear axle or single wheel, all are acceptable to the buying public. The actual size and shape of the cars vary enormously. The track width of four-wheeled cars varies from 42 to 58 inches, and the wheelbase from 80 to 150 inches. The tire sizes on cars vary from 27 by 2½ to 35 by 5, and wheels may be wood, steel-spoked, disc or wire, the last being in the majority. Starting may be electrical or unassisted. Lighting is by electricity or gas. The ignition, however, is almost universally by magneto, but the battery is slowly gaining."

The fact of small production and high quality obtaining throughout Europe, including the British Isles, means that even their smallest, cheapest automobiles are very high priced, judged from our standards in spite of the fact that wages are very low, the average for a good automobile mechanic being about \$15, normal exchange.

The four-cylinder Fiat, rated at ten horsepower and with a 2.5-inch bore, sells in England for £670 complete with torpedo body. At normal rates of exchange that would be about \$3,300 in our money for a car distinctly smaller than a Ford. To that must be added a tax of £11. It so happens that this same model can be purchased in America for less than \$3,000, duty paid, but that is due to the present difference in exchange.

Smaller and somewhat cheaper cars, but still expensive from our standpoint, may be purchased at slightly less. Some very small and not particularly attractive automobiles may be purchased for as little as £300. Practically speaking, it is impossible to buy a car in Europe for less than the equivalent of \$1,500 in our money, and measured in terms of human effort this price should be double because of the lower wages there, which means that the number of automobiles in Europe is as limited as it would be here if the very smallest, cheapest machine sold for a minimum of \$5,000.

Knowing these facts, it is easy to understand the popularity of the small machine, and also to expect still smaller machines to be developed. Also, it explains the popularity of the motorcycle over there.

In this country it may be expected that light car development will take two paths, one towards smaller, cheaper models than are now obtainable, and the other towards high-grade machines about the size of the smallest now produced here. In both cases the upkeep expense will be much less than that obtained on any machines now used. The very small, light, cheap car

will cost about as much to run as a motorcycle. It will be a machine within the reach of every man, and there is no question but that when the right type is evolved by one factory or several factories that several million will be placed and kept in the hands of users.

Several small cars are under way in this country, and almost every factory in Europe is building a small model or planning one. Delage is building a 10-horsepower model with front wheel brakes. Darracq (France), Lancia (Italy), and Austin (England) are planning 10-horsepower four-passenger models. Panhard (France) is building a car with a 2.8-inch bore, but is contemplating a still smaller one. Sunbeam (England) has a 10-horsepower under construction. Three of the leading French makers are experimenting with cycle cars with the intention of marketing them soon if they prove satisfactory.

This development of the new light car, with its lower weight, possesses for the owner-driver certain advantages impossible with the heavier and longer cars. It cannot, of course, compete with them in those luxurious qualities that go with long wheelbase and great weight, although in most cars it has been so carefully designed and so well balanced that it is an amazingly comfortable car over the roughest roads. But the lighter weight considerably reduces the effort necessary to control the car and adds greatly to ease in handling it.

Driving Comfort Studied

While America is studying the light car her designers have paid great attention to driving comfort, and among the peculiar advantages for the owner-driver, one should perhaps begin by telling of the ease of manipulating the car controls. Considerable engineering advances have been made in the system of clutch and power transmission, and these have given an unsurpassed ease of control and operation.

In working out the design, model after model has been built by various companies in the effort to reduce the total of rotating weight, and so to secure the smallest possible inertia in the parts which are revolved when the gear is shifted. It is obvious that if there were no weight except the gear itself to be picked up when the clutch is thrown in, it would engage without a jar and without the possibility of clashing gears. In the ordinary car, the weight on the clutch, however, is many pounds and the momentum is tremendous, resulting in jars and clashes which the utmost skill cannot always prevent. Engineers in

working on the light cars have attempted to take this weight off the gears and put it on the fly wheel, where it is an advantage instead of a defect.

The gear shifting lever also has been worked out to a new standard of refinement in order to reduce friction.

In the brakes, too, everything has been done to give ease, smoothness and ample power. The brakes are perfectly equalized, reducing the chance of skidding and insuring smooth action. They are large enough so that the wheels can be locked by comparatively little pressure on the foot brake.

The ease of the controls, combined with the power and flexibility of the engine, shows startlingly when one undertakes to drive through traffic. Many of the models of today operate easily on high gear at any speed from three or four miles to above forty. The ease of steering, along with this acceleration, makes it a simple matter to thread one's way through a crowded street, and other cars can be "picked up" and passed without difficulty. The short wheelbase helps in this, as well as permits parking in a much narrower space than is possible with big cars. Then many of the cars of today have a short turning radius, permitting them to be swung around in even a narrow street and making it comparatively easy to get in and out of tight holes at the curb.

All this can be done with the car without strain or effort, so that in driving its owner will feel a mastery of the road never before known to a light car.

As a result of all these things the type of car has appealed particularly to women drivers. Many have found that they could handle it for hours without weariness, even in heavy traffic, and it is bringing into the class of women drivers hundreds who have shrunk from the fatigue caused by driving an ordinary car. The comfort of the woman driver has been particularly considered in the design of the pedals.

This great freedom from trouble is based both on the design and on the manufacture. Beyond this, however, pains have been taken to make repairs and adjustments easy when they do occasionally become necessary. In present day cars simplicity has been achieved in all ways, and they are particularly designed so that all screws or nuts necessary to making adjustments can be easily reached, especially on the motor. All the accessories are so mounted that they can be got at without trouble, and it is unnecessary to dismount any one accessory in order to adjust any other.

CALIFORNIA'S ROAD TEST

(Continued from page 18)

matter of discussion among engineers. Frequently engineers made allowance for these changes by building an expansion joint transversely across the pavement. Even then the pavement would often crack at other points, and this led to a practice of eliminating the expansion joint entirely and allowing the pavement to crack of its own accord. Particularly has this been true in climates where there was a small range of temperature. Such cracks were treated as expansion joints by filling them with asphalt or other plastic materials. So important is this expansion and contraction factor that it was one of the first matters to be investigated at the Pittsburg test highway, and points were established throughout the entire layout for observation. A delicate instrument measuring to one ten-thousandth of an inch and known as an Ames dial has been used to make the measurements. It is rather peculiar that so destructive an agency requires such a delicate instrument to record its activities.

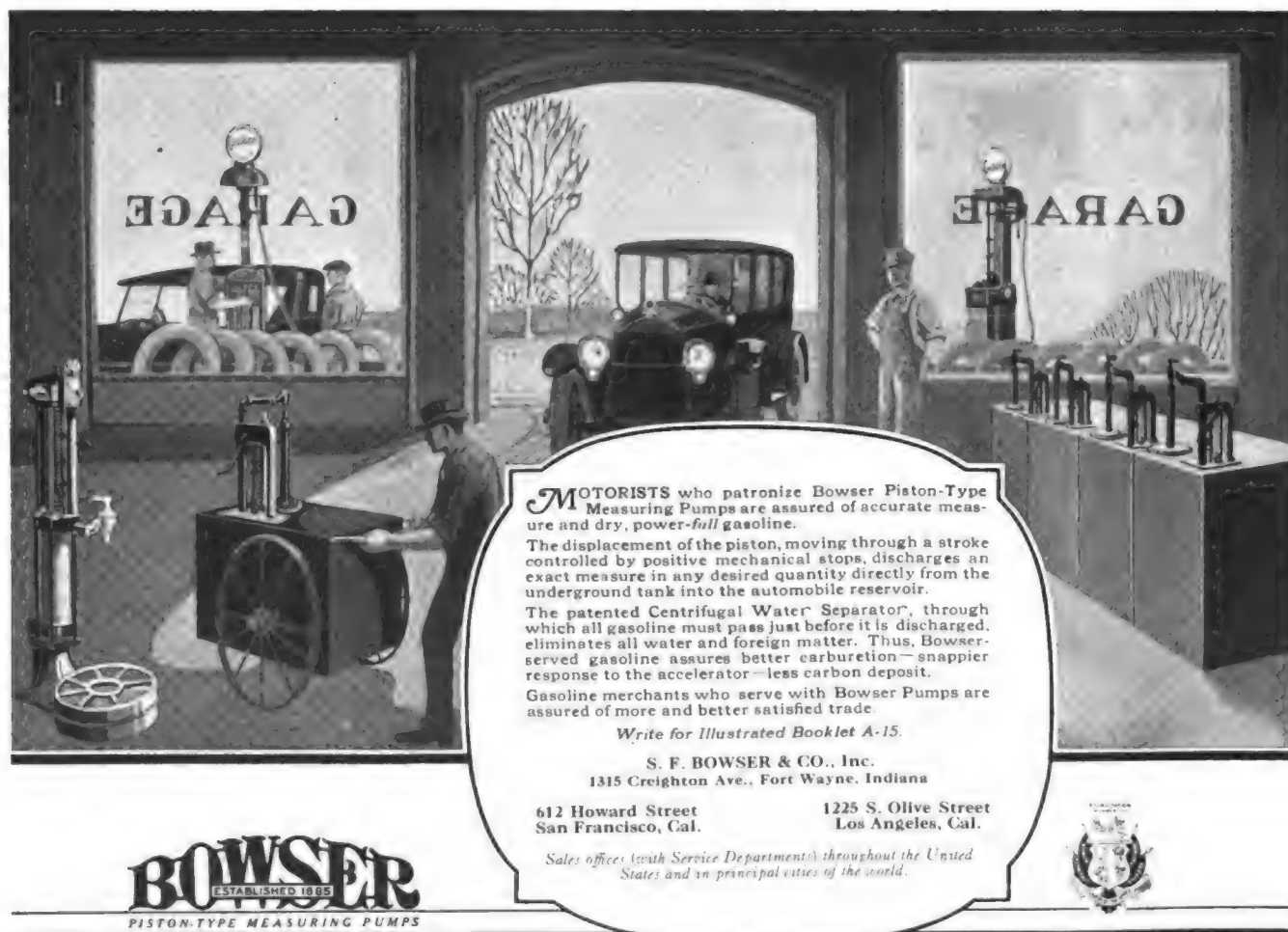
Many engineers were surprised at what was found. The size of the movements that took place in the concrete slab on account of changes in temperature could be calculated with mathematical precision, but their nature could only be conjectured. It has been found that what actually takes place is that a concrete pavement develops waves not unlike those of an ocean and that these waves rise and fall with changes in temperature. The high points of these waves are directly at the transverse cracks in the pavement slab. Viewing the pavement crosswise or transversely it was found that the edges actually curl up and to such an extent that they can readily be measured. With knowledge of the nature of these movements and with the ability to calculate their size, it would appear that remedial measures to overcome the destruction caused by them will soon be devised.

The Life of the Slab

As in the matter of temperatures, detailed investigations are being carried out of all other matters having

a bearing on the life of a pavement slab. A few points have now become evident, such as the fact that in a majority of observations a moving load does not produce as great a deflection in the concrete slab as one standing still. Impact has been studied sufficiently to show already that it takes a high rate of speed and a fall of at least 1 inch to produce deflections in a slab that are at all serious. This must also be done by a vehicle using hard rubber tires. There are few commercial trucks using hard tires that reach a high speed, and the larger the truck the slower its speed. Furthermore, a highway as built today and properly maintained does not offer much in the way of a real rough surface. Impact therefore does not appear to be quite as serious a factor as has formerly been the idea.

Several types of trucks and trailers were brought up from San Francisco on December 17 for experiments. A Macdonald truck was of especial interest. It proved the elephant on the track, carrying a load of 25 tons, which, with its own weight, made a



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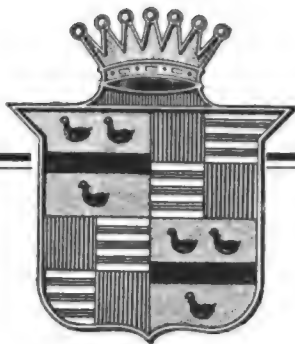
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total of $33\frac{1}{4}$ tons on four wheels. The design of this truck is such that its large load is so distributed that not nearly the slab deflections were obtained that would have been under a similar load on a standard type truck.

Data for Truck Design

A White truck and trailer, a Sterling and trailer, and a Moreland and trailer were all put through maneuvers, impact, static and moving deflections under various loads being obtained. A Fageol truck is to be used also. It is possible to obtain greater speed with some of this equipment than has been reached so far in the regular experiments. It is therefore expected that the data being now collected will prove of real value to truck designers and operators as well as road engineers.

Probably Tuesday, December 20th, can be pointed out as the turning point in the stability of the test road. Previous to that time the pavement was obstinate in its resistance to destructive operations. The enormous tonnage carried by the road has not produced any marked failures. On that day, however, the observers detected an increase in the development of cracks and since then disintegration has been rapid. It appears that just previous to this day a rain had occurred of sufficient volume to saturate portions of the subgrade—that all during the previous week the unit loading of the trucks was increased, causing greater stresses in the concrete and that the concrete was beginning to reach its fatigue point. So with the concrete itself ready to give up the battle, a weather foundation and yet a more concentrated

punishment the turning point was reached. Since then large areas have had to be repaired, and the hurriedly organized maintenance crews have been kept busy.

Disintegration Proceeds

Failures are not confined to any particular section, although more pronounced in some than in others. Even now insufficient destruction has taken place to say with any degree of certainty which sections are failing first and which will ultimately show up the best.

If disintegration proceeds as rapidly in the next month as it has in the past few days there will soon be little left of the test highway, but in its place there will be a volume of information of inestimable value to road engineers and builders.



AUTO LICENSE RENEWALS JANUARY 16th

Motorists will greatly facilitate the heavy task of the Motor Vehicle Department and assure better service to all if they make renewals of their State certificates of registration for the year 1922 at the nearest branch office of the State Motor Vehicle Department,

according to a statement given out by D. E. Watkins, Secretary and General Manager of the California State Automobile Association.

A new branch of the department will be opened in Oakland in the Oakland Garage Building on Harrison

Street, between Fourteenth and Fifteenth, and East Bay motorists should arrange to make their renewals through that office. Other branches are located at San Francisco, Los Angeles, Fresno and San Diego, headquarters being at Sacramento.

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Superintendent Charles J. Chenu recently arranged for the removal of the San Francisco branch from the Ferry Building to the Masonic Temple Building, 28 Oak Street, where quarters are much more commodious, as well as convenient to the motoring public. A. J. Healy, Chief of the San Francisco office, states that he will be in position to handle license renewals in San Francisco without congestion in these new quarters, and that it will not be necessary for San Francisco motorists to stand in line as in the past at the Ferry Building, where the quarters were very cramped.

The Motor Vehicle Department will begin issuing 1922 licenses on January 16th. The rate of 40 cents per horsepower will prevail as in the past. Motorists will turn in to their nearest branch of the Department, instead of to the headquarters at Sacramento, their 1921 certificates of registration, properly signed by both the owner and the legal owner, accompanied by certified check or money order in the required amount, and the new 1922 certificates and plates will be given them by the Department.

U. S. to Protect Road Signs

An agreement under which the U. S. Forest Service and the California State Automobile Association will co-operate in preventing the mutilation of road signs and other direction markers and in the prosecution of such cases has been perfected by Paul G. Redington, District Forester, and Secretary-Manager D. E. Watkins of the Automobile Association. Through publicity, lectures and exhibits the two agencies will co-operate in an educational campaign.

Forest rangers will be instructed to protect the signs of the Automobile Association, and the same orders have been sent to the field agents of the Association. Both the Government and the Automobile Association spend thousands of dollars annually in replacing mutilated signs. The co-operative agreement is expected to reduce these expenditures to a minimum.

Fewer Tire Sizes

Automobile engineers have decided to use fewer sizes of tires and rims as original equipment on passenger cars in the future. The reduction in the number of sizes will result in decreased costs to the tire and automobile

manufacturers, to the dealer and to the automobile user, as less money will be tied up in machinery and finished products.

The sizes which will not be used in future production are the 32 by 3½, 33 by 4 and 33 by 4½ inch rim sizes and 32 by 3½, 33 by 4 and 33 by 4½ inch regular and 33 by 4, 34 by 4½ and 34 by 5 inch oversize tires. The 30 by 3½ inch straight side rim and the 31 by 4 inch oversize straight side tire, which have not been considered standard sizes in the past, will be used in the future. Automobile engineers have by this action limited themselves to the use of five rim sizes and nine tire sizes for passenger cars and the same number for motor trucks.

The action outlined above has been taken by the S. A. E. Tire and Rim Committee, members of which represent the Rubber Association of America, the National Automobile Chamber of Commerce and the Society of Automotive Engineers. The recommendation is still to be approved by the National Automobile Chamber of Commerce and the Society of Automotive Engineers, but it has met with the approval of the Rubber Association of America and of the automobile engineers interested.

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MOTOR GOSSIP OF THE MONTH

(Continued from page 20)

Before describing the mechanism, it is illuminating to pause and consider just how wonderful this feat is. The average car in use today, if equipped with good brakes, will stop from a speed of a mile a minute in about 400 feet, and the man who is able to do this considers that he has real good brakes. When driving a car at this speed, the eyes of the driver are glued on the road at a distance of about 400 feet ahead, and in applying the brakes the car is brought to a stop by the time it has reached the point that his eyes were focused on. Therefore, in stopping the car in 400 feet, the driver rightly considers that he has made a quick stop. Cars with rear wheel brakes in particularly good adjustment have been known to stop in as little as 335 feet. By equipping an automobile with the usual four-wheel brake design, this figure may be reduced to 145 feet, or less than half. Considering that a machine running a mile a minute covers the ground at the rate of 88 feet per second, this is an extremely quick stop. But the record made by this well-known English car is more than 50 feet better than the

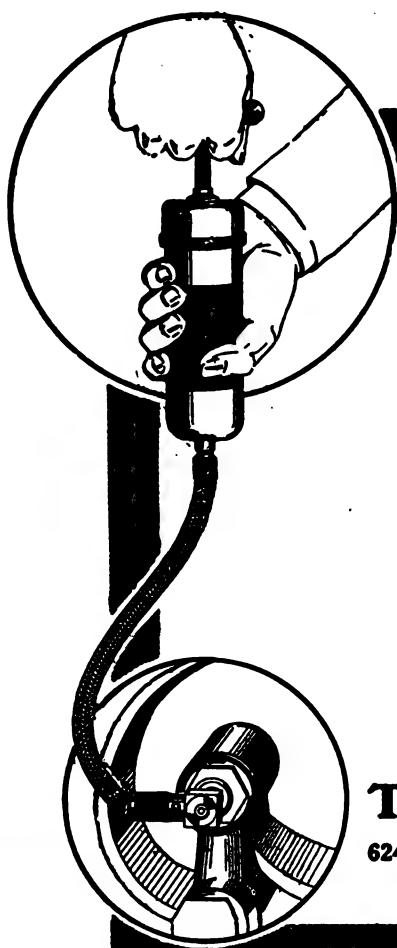
best previous one. Stopping a machine from a speed of more than 60 miles an hour in $93\frac{1}{2}$ feet means that the machine was brought to rest in just a trifle more than the distance that it would travel in one second.

The feature which makes this machine so easily stopped is found in a simple mechanism which makes it impossible to lock the wheels. The brakes may be applied with full force and yet the wheels will not slide. It is a well-known fact that in order to stop a given car in a minimum distance it is necessary to apply the brakes just enough so that the wheels will not slide. If the brakes are applied less than this amount, full braking effect is not realized. On the other hand, if the brakes are applied more than this amount, the wheels slide. A sliding wheel will not hold a car back nearly as much as a rolling wheel. This is true because sliding friction is always less than rolling friction.

This very desirable state is brought about by fitting a simple centrifugal clutch to each brake band. The brake band is located as usual on the wheel,

but the band is not connected directly to the wheel. There is a centrifugal clutch between it and the wheel. As long as the wheel is rotating, there is sufficient centrifugal action to hold the band solidly to the wheel. But if the brake is applied a little too vigorously, the wheel tends to slow down. Centrifugal force grows less, and the result is that the centrifugal clutch begins to slip. Inasmuch as the drum is gripped by the band, this slipping action is a braking action, but it is a braking action which cannot lock the wheel. As a matter of fact, the centrifugal clutch works so perfectly that very little slipping actually takes place, and the net effect is really to permit the brake to be applied with full force and yet not slide the wheels even a trifle. As a consequence the full force of the braking action is lost in sliding the wheels.

The centrifugal clutch is not complicated. In fact, it is so simple that the mechanism promises to attain instantaneous popularity. The clutch consists merely of a series of cast-iron blocks which fit into recesses inside the brake drum, and which are forced



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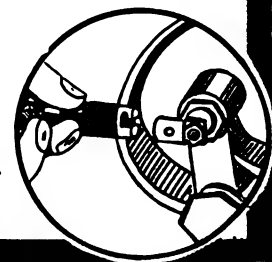
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When better automobiles are built, Buick will build them

against the near side of the drum by centrifugal action. There are no levers or bolts or moving parts and there are no adjustments. It is always in working order.

It is easy to apply the brakes on this car with full force because the momentum of the car is used to supply the braking effort. This interesting modification is found on several

European cars now and is quite apart from the anti-locking feature just described. A small brake drum is placed on the drive shaft. One end of this brake band is attached to the brake pedal and the other end is connected to the brake operating mechanism. As a consequence, a very delicate pressure on the brake pedal contracts the band enough so that it

tends to rotate with the drum, and in so doing a very powerful pull is applied to the brake mechanism.

The practical advantages of such an efficient braking system will be left to the imagination of the reader, with the single remark that such a system because of its extreme efficiency must eliminate a large percentage of automobile accidents.



WHERE DO THEY GO TO?

(Continued from page 21)

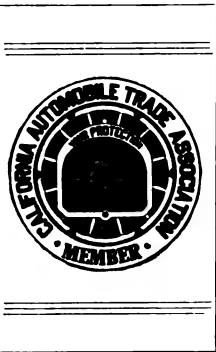
Ball and roller bearings are sold in considerable quantity, because many owners of old cars prefer to buy old bearings rather than buy new ones and pay the full price. The man who wishes to rebuild an old car, substituting bucket seats and a gasoline tank for a standard body, usually finds the extra equipment that he wishes in an establishment of this sort.

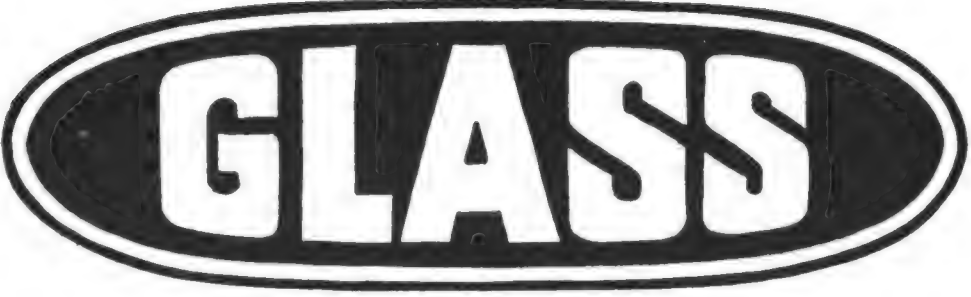
Wood wheels are frequently sold to owners who own cars equipped with

tires of odd size. A man having a machine with 36 by 4 tires will go to such a concern and buy a set of 33 by 4 wheels for a few dollars, and put these wheels in place of the larger ones. There are several objects in so doing. The car with the smaller wheels is lower to the ground. The car climbs hills somewhat better, although its speed is not quite so good because of the smaller wheels. However, the most important reason for changing

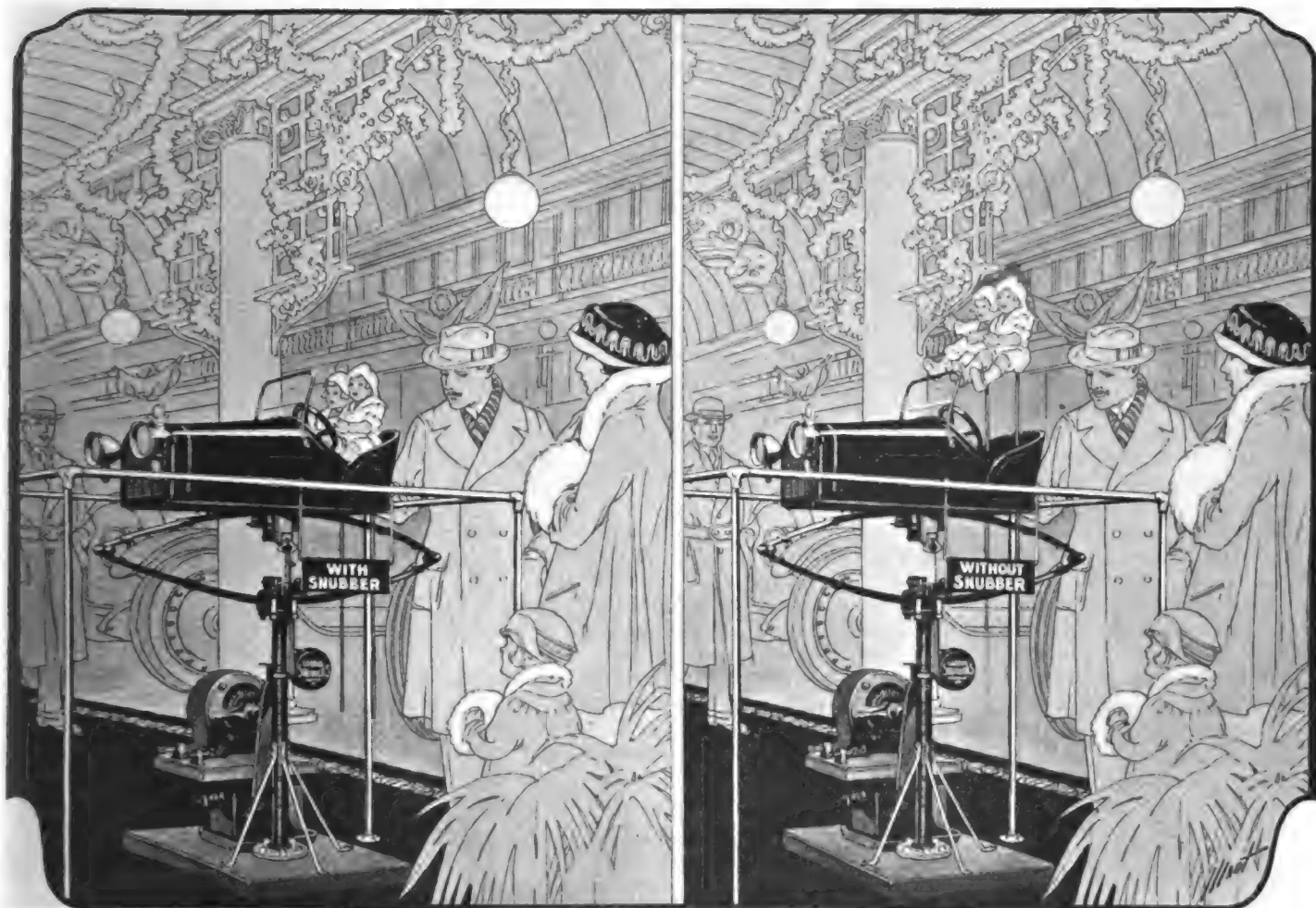
wheels is found in the fact that the tire size may be reduced, particularly if a lighter body is substituted at the same time. And still more important, the owner of the old car can obtain far better tire bargains if the wheels are standard size.

Owners of old cars frequently pick up attractive bodies at bargain prices, substituting, for example, a neat four-passenger body for a clumsy old seven-passenger design.

	<p>FOURTH ANNUAL OAKLAND</p> <h1 style="margin: 0;">AUTO SHOW</h1> <p><i>January 16th--22nd</i></p> <p>OAKLAND CIVIC AUDITORIUM</p> <p>ROBERT MARTLAND, MANAGER</p> <p>MUSIC BY ROSEBROOK</p>	<p><i>Under Auspices of and Conducted by MOTOR CAR DIVISION of the ALAMEDA CO. AUTOMOBILE TRADE ASSN.</i></p>
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<p>Complete Stock</p>	 <p>DEALERS IN GLASS OF ALL KINDS FOR THE AUTOMOBILE TRADE</p> <h2 style="margin: 0;">FULLER & GOEPP</h2>	<p>Prompt Deliveries</p>
<p>32 PAGE STREET SAN FRANCISCO PHONE: MARKET 499</p>		<p>SYNDICATE BLDG. OAKLAND PHONE: OAKLAND 1165</p>

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See how the manikins keep their seats when Gabriel Snubbers control the action of the springs. Then see how they bounce up in the air when there is nothing to check the rebound of the springs.

You'll quickly understand why over sixty of the leading car builders either use Gabriel Snubbers as standard equipment or drill the frames for them. This year more than ever before you should demand comfort and economy

—full value for your money no matter what price car you buy.

If the car you want is not equipped with or drilled for Gabriel Snubbers —ask why. Remember, there's only one Snubber—the "Gabriel."

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SIXTY LEADING CARS ARE EQUIPPED WITH OR DRILLED FOR GABRIEL SNUBBERS AT FACTORY

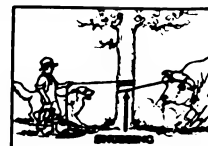
GABRIEL SNUBBERS

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At the Pacific Coast Shows

The Gabriel Snubber Demonstrator will draw its usual big crowds at all the automobile shows on the Pacific Coast. Don't fail to see it.



WHAT'S AHEAD?

(Continued from page 15)

the rear the axle shafts are exposed and are provided with universal joints, since the differential housing is bolted to the frame of the car. In still another car recently announced the axle is eliminated from the front end only.

Valve Improvements

There are indications that gasoline engine design is far from standardized. There is even a possibility that the poppet valve now so popular will not always hold sway. Engineers are still working on valves of all kinds, and the recent announcement that the new 20-horsepower Vulcan is equipped with a cuff valve engine is food for thought. This is a well-known English car, and it is said that the adoption of this new valve permits 82 horsepower to be developed at 3,200 revolutions per minute, in a four-cylinder engine $3\frac{1}{2}$ by $5\frac{1}{2}$.

One objection to overhead cam shafts is the fact that the gearing between the cam shaft and the crank shaft is troublesome and expensive. It must be quiet, and therefore it costs

money to make it. This difficulty has been eliminated in an interesting way by the Leyland Company in England by the use of a triple eccentric to drive the cam shaft from the crank shaft. An eccentric is just another name for a crank which has a large diameter pin and a small throw. It is plain that three cranks are required to give an even motion.

It may be expected that cars will be still cheaper in 1922, not so much because of reduction in labor and materials as because production methods are improving. To quote a specific example, the Continental Motors Corporation has recently re-equipped its factory with the very latest machine tools. Most of these tools are especially designed for the production of Continental engines, and they represent the last word in speed and efficiency and accuracy. For example, they have a new drilling machine especially designed which drills 84 holes in a crank case at once. The whole operation requires just one minute. Until this machine was installed, the best record for this work

was three minutes on a number of machines, and in the average engine factory from 9 to 12 machines are required to do the same work. It would be possible to go right through the automotive industry and quote similar examples of improvement. And it is the development of machines of this sort that explains the present low prices, and it may be confidently predicted that as a result of the adoption of machines of this sort that prices will go still lower.

It is too early to say just how extensively the four-wheel brake will be used during 1922. Judging from the popularity it has obtained in Europe, it should appear as standard equipment on several of the better grade cars. There are more than fifty makers in Europe employing this brake and it is the firm belief of those in the know that it will eventually find its way into the design of many other cars. Almost every car in France, Belgium, and Italy that may be considered a quality product has four-wheel brakes, and they are beginning to be adopted in England.

Create your own good roads!

USE

HOUDAILLES

(SAY HOO-DYE)

BAD roads seem like good roads to a motorist driving a car equipped with *Houdaille Hydraulic Shock Absorbers*. The "short cut," which many would avoid, can be traversed with the same ease and security as riding over a smooth macadam drive. You need never worry about the unexpected bump. Houdailles gently cushion the compression of the springs and check the rebound. The effect is unsurpassed roadability.

Houdailles are used as factory equipment on many of the world's best cars. Let us give you a demonstration.

H. D. SCHRODER & CO., Inc.

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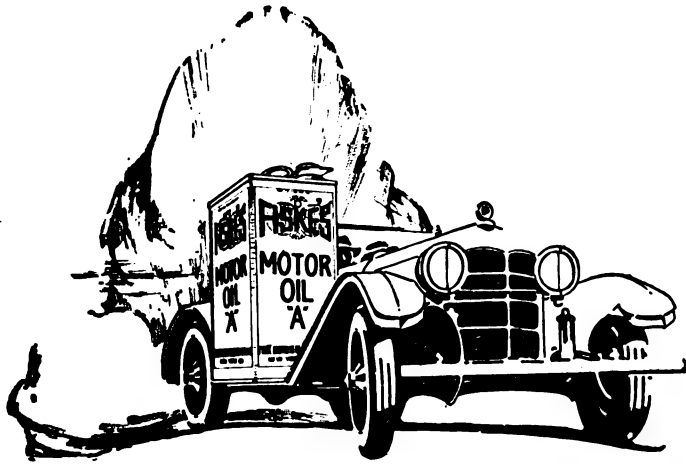
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112 Market St. Sutter 6115 San Francisco

"THE SIGN THAT STAYS IS THE SIGN THAT PAYS"



WHY CAR OWNERS RELY ON FISKE'S LUBRICANTS



LUBRICANTS

"Standard in Quality for Over Fifty Years"

FOR more than fifty years we have been making high quality lubricants. The experience and the knowledge gained of good lubricants, together with our up-to-date manufacturing facilities make a combination which establishes Fiske's Lubricants as the finest that can be secured.

It is impossible to buy better lubricants—no matter how much more you pay for them. Fiske's Lubricants are made in a number of different grades and consistencies—but only one quality—the highest.

When you buy Fiske's Lubricants you get right down to the last drop the best that it is possible to secure. That is why car owners rely on Fiske's Lubricants.

Fiske's Motor Oils are refined from premium Pennsylvania crude, the best source for motor oils. They are made in different grades for every kind of motor.

Fiske's Gear Lubricant is specially prepared for the lubrication of transmission and rear ends and possesses many features which make it an ideal gear lubricant.

Fiske's Cup Grease possesses fine lubricating qualities, can be used in all grease cups, grease guns and pressure grease feeding systems. Will not harden in the grease cup.

Fiske's Cleanser will cleanse your car of dirt and grease and make the work easy for you without harming the finish. A cleanser you will like.

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Fifth Street at Davis
PORTLAND

DEFINITE PLANS MADE FOR PAVING VICTORY HIGHWAY

Signs Erected as far East as Kansas City by State Automobile Association

Plans for the improvement of the Victory Highway from New York to San Francisco are taking definite form, according to President George S. Forderer of the California State Automobile Association. By January, 1922, every mile of this new trans-continental route from New York to St. Louis will be paved. The highway has been signed as far east as Kansas City by the California State Automobile Association.

When the hard surfacing of all roads included in the Victory Highway between St. Louis and New York is completed, about two-thirds of the distance from coast to coast will either be paved or in good condition for all season tourist travel. A drive for funds to improve the section of the route through Nevada is now under way. The entire State of California can be crossed on highways, parts of Colorado are well paved, and there is a portion of the highway in Utah that is improved. Near Salt Lake City the Victory Highway on its route westward passes over the Wendover Cut-off. This section of the road is laid on a bed of solid salt and is the

fastest stretch anywhere on the route. The Victory Highway Association, with headquarters in Topeka, Kansas, plans to enlist chambers of commerce, automobile clubs and other civic associations along the 3,400-mile route in its program of gradual road improvement until the new highway is able to provide all-year tourist travel across the United States.

The California State Automobile Association has erected approximately 6,000 of its now nationally famous yellow and blue road markers on this new route. Northern California will greatly benefit from the Victory Highway, which will assure this section of the State of its just share of tourist travel.

C. S. A. A. Hotel and Garage Service

H. William Nelle, former manager of the San Francisco Advertising Club and well known in civic work throughout California, has joined the executive staff of the California State Automobile Association. Nelle will be manager of the Association's Hotel and Garage Service Department. In his new position Nelle

will be responsible for the service received by the 30,000 members of the Automobile Association from hotels and garages throughout Northern California. The new plans of the Association call for the classification of Northern California hotels and garages according to their accommodations and service facilities. A complete investigation will be made of every hotel and garage receiving an official endorsement from the Association, and Nelle's department will see to it that no member of the Association is overcharged or given below standard service. The Association now has several hundred official hotels and garages which are recommended to members. This list will be increased and the names listed on the Association maps, pamphlets, and in its official magazine. It is the plan of the Association to supply detailed information to members concerning each of its official hotels and garages, including rates, class of accommodations, etc. Service and fair treatment will be assured the motorists by every hotel and garage carrying a C. S. A. A. official sign.

HOTEL ST. FRANCIS

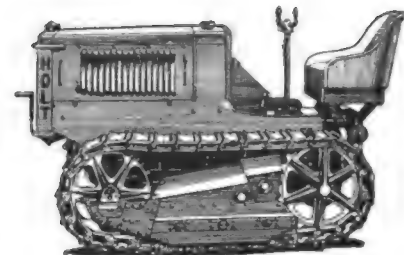
On Union Square
SAN FRANCISCO, CALIF.

A triumph of architectural beauty where the city's commercial and social life converge.

Combining all the essentials of hotel happiness—it is a fitting reply to the problem: "WHERE TO STAY WHEN IN SAN FRANCISCO."

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THOS. J. COLEMAN
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At Last—the Supreme Small Tractor

CATERPILLAR
Reg. U.S. Pat. Off.

T-35 Tractor

Size has been limited without sacrificing power, weight is lessened without imperiling strength in this latest Holt contribution to economical power forming. Only the development of new qualities of steel and better methods of heat treatment have made possible the production of "Caterpillar" T-35 Tractor. It is only 48 inches wide and 52 inches high, weighs but 4,000 pounds, yet develops a liberal surplus of power over its 14 drawbar-horsepower rating. You will want full information regarding this new Holt achievement. Write for it now.

THE HOLT MANUFACTURING CO.

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Within the Law

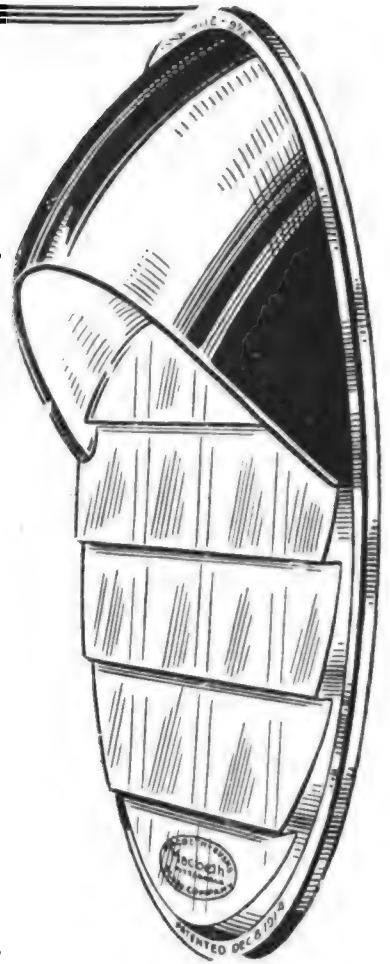
MACBETH LENSES

The Distinctive Green Visor Lens

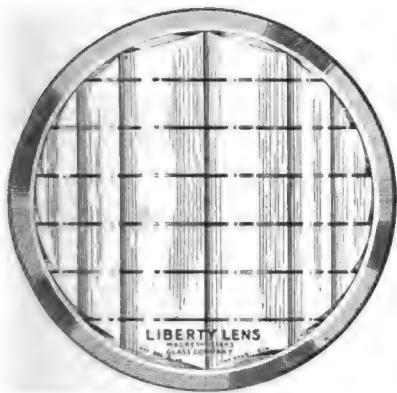
THE Macbeth Green Visor Lens is given the highest rating by legal authorities everywhere.

Officers of the law everywhere recognize it instantly. The driver is never stopped or troubled.

And the way is brightly, safely lighted because the Green Visor Lens concentrates the light on the road where it is wanted. No glare is permitted. The Macbeth prisms bend the light down far ahead below eye level, and spread it in uniform brilliance. The Green Visor is the most distinctive lens in motordom—a protection at night, a decoration by day.



PRICE, per pair **\$5.50**



Plenty of Legal Light

The LIBERTY LENS

The Macbeth-Evans Company's latest achievement is the LIBERTY AUTOMOBILE LENS. During the half century in which Macbeth-Evans has been building the world's lenses no product bearing their name has ever failed to add to its prestige.

With this record the LIBERTY LENS needed no introduction. Its merit known immediately, the LIBERTY LENS at once became standard equipment on more cars than any other lens.

Long Range---Splendid Side Lighting

300 to 400 feet range—no glare—and all the curves and ditches as brightly lighted as the middle of the road! Six perpendicular prisms on the front surface of the lens spread the light. Seven transverse prisms in the rear bend the rays under a line 42 inches high, 75 feet ahead. A safe, remarkably efficient lens—legal everywhere.

PRICE, per pair **\$3.25**

Standard Equipment on

JORDAN, CASE, DANIELS, TEMPLAR, STUDEBAKER, STANLEY, WINTON, COLE, PAIGE, NATIONAL, STANDARD, PEERLESS, BRISCOE, GRANT, BILTWELL, COLUMBIA, AMERICAN, PAN-AMERICAN, PATTERSON, PREMIER, JONES, SHERIDAN, HUPMOBILE.

TRUCKS

SERVICE MOTOR TRUCK
INTERNATIONAL TRUCK
GARFORD, VIM

For Sale by All Jobbers and Dealers

Macbeth-Evans Glass Company

New Call Building, San Francisco

HERE AND THERE IN MOTORDOM

The Automobile Show Season Is at Hand

Here, in the West, one of the banner events is to be the Pacific Automobile Show, which will be held in the San Francisco Auditorium February 11 to 18, inclusive.

Next month's spectacle, which is an annual feature, is to be one of the most elaborate exhibits ever held in the West, according to plans which have been matured. All departments of the automotive world are to be represented including passenger cars, trucks, equipment and accessories.

The Exposition Auditorium is to be beautifully decorated for next month's event, the main floor, corridors and galleries all coming in for attention. Notable artists and designers have this angle of the show in hand and they have promised something unusual.

Applications for space in the February show are stated by George Wahlgreen, who is manager for the event, to be coming in very rapidly and the problem of caring for everyone is likely to be a real one. Automobile distributors in California are all seeking representation, while eastern manufacturers' agents are asking for space for accessory and equipment displays.

All of the latest passenger car models will be on exhibition at the big auditorium and the thousands who are expected to look over the array will see everything that is new and fashionable in the automobile world. The coming show is the sixth annual affair of its kind in San Francisco history, and its record has ranked it as the most brilliant of any held west of Chicago.

Timken Extends Service

The Timken-Detroit Axle Company announces it will be represented throughout the country by official parts distributors. These parts distributors will distribute Timken axle service parts for both old and new model cars, trucks and tractors for which they have furnished axles and worn gears.

This important step was decided upon to give quicker, better and more complete service to Timken users, as there are over 170 different truck and car manufacturers using Timken axles and worn gearing.

The distributors who will handle Timken service parts are widely known in their territory for the complete parts service they render. They will have branches completely covering their territory and will carry on hand at all times a complete stock of required parts.

It has been planned that in no section of the country will a vehicle using Timken units be outside of the twenty-four hour service these parts distributors will give.

Formerly some of the Timken users were compelled to wait several days for replacements. Now the Timken-Detroit Axle Company brings replacement part service right to the user. No longer will vehicles be tied up for several days, which means the inactivity of the vehicle and a consequent loss of money-making hours. With the twenty-four hour service now offered this loss will absolutely be eliminated.

The Timken-Detroit Axle Company announces that the Colyear Motor Sales Company has been appointed the official distributors of Timken service parts for one of the most important territories in the entire country—the Pacific Coast.

This important move is the result of the Colyear Motor Sales Company's fight against "pirate parts" through its tremendous Pacific Coast organization with branches in all principal cities.

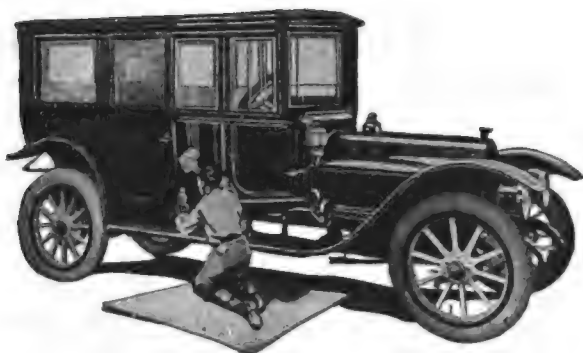
Oakland's Motor Show

One of the most notable of the January automobile events is to be the Oakland Automobile Show, which will be held under the direction of the Motor Car Dealers' Division of the Alameda County Trade Association, January 16 to 22, inclusive, in the Oakland Civic Auditorium.

Robert W. Martland, secretary-treasurer of this organization, has made announcement to the effect that the coming show is to be one of the most notable ever held in the east bay district. All departments of the automotive world will be represented in the show including passenger car, truck and accessory exhibits.

The decorative scheme for the Oakland show has been placed in the hands of Mrs. Elizabeth Lopez and the amount to be expended for this angle of the event will be in the neighborhood of \$15,000. The musical program for the Oakland show is to be cared for by David C. Rosebrook who, with his band, has been holding numerous recent rehearsals in preparation for both daylight and evening entertainment.

All of the latest models are to be shown at the Oakland show, according to Martland, east bay dealers having made many applications for exhibit space. Twenty-nine exhibitors of passenger cars have secured space for the Oakland show.



W. P. FULLER & CO.
"Since '49"

THIS is the time to look after the automobile. If the enamel is cracked, apply FULLER'S AUTOMOBILE ENAMELS. If it's "alligatored" the same treatment holds true.

Cars that were recently new can be rejuvenated by using FULLER VARNISHES. A coat of FULLER VARNISH now saves the expensive enamels and undercoats.

FULLER'S MOHAIR DRESSING is invaluable for preserving automobile tops. FULLER'S LEATHER DRESSING for preserving all leather and imitation leather upholstery. FULLER'S METAL PAINTS for the chassis. *At your dealers.*

THE SHORT WAY FERRY

SHORTEST AND MOST DIRECT AUTOMOBILE ROUTE BETWEEN

SACRAMENTO--Sonoma--Napa--Oregon and Oakland--Los Angeles--SAN FRANCISCO

SAVE TIME

SAVE MILEAGE

SAVE MONEY

Travel via the "SHORT WAY FERRY" on the fastest and most modern AUTO FERRY BOATS afloat.

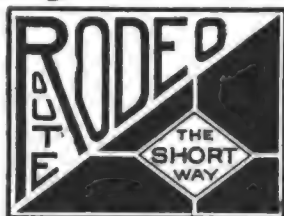
Two Boats—HALF HOUR SERVICE

EXCELLENT DINING SALOONS

RODEO-VALLEJO FERRY CO.

AVEN J. HANFORD, Manager

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NO CURVES—NO GRADES

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8:30 a.m.	4:00 p.m.	8:00 a.m.	3:30 p.m.
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1:30 p.m.	10:00 p.m.	1:00 p.m.	9:30 p.m.
2:00 p.m.	11:00 p.m.	1:30 p.m.	10:30 p.m.
2:30 p.m.	12:00 p.m.	2:00 p.m.	11:30 p.m.

*Sundays and Holidays Only

a wise-£ foolish

We frankly wonder as this company has grown in size if we have not reversed the old saying and have possibly become "pound wise and penny foolish."

We mean that, in the glory of handling big runs, fine color work and the like, we have overlooked the possibilities of the little "penny" jobs.

This is a frank solicitation for your small printing jobs—simple statements, bill heads, ruling—what not.

The placing of your next order will be a good time to start getting the most out of your printing needs.

H.S. CROCKER COMPANY INC.

565-571 MARKET ST. SAN FRANCISCO

SACRAMENTO OAKLAND LOS ANGELES

New Accessory for Fords

The Burke Manufacturing Company, Dayton, Ohio, are putting on the market a grease retainer for which the claim is made that it will positively stop the leakage of grease on the rear axles of Ford cars.

This new retainer is made of accurately machined parts of bronze and steel, with a non-absorbent cork packing and insures a tight and permanent leak proof job.

One of the features of the Burke retainer is the center bronze sleeve, which floats with the side play of the axle. Another exclusive improvement is the lug which fits the key-way of the wheel to keep the sleeve turning with the axle.

With the use of this retainer, the grease is shut within, not away from, the bearings. It allows the differential gears and bearings always to be flooded with the lubricant, while at the same time keeping the brakes and tires dry.

It is easily and quickly installed. No special tools are required, nor does it in any way change the standard Ford construction.

Another Cooper Product

A patented dash control for muffler cut-outs, air chokes, radiator shutters, heater valves, etc., is a new product of the Cooper Manufacturing Company, of Marshalltown, Iowa, makers of the Cooper Special Cut-Out.

This dash control is an attractive nicked device installed by boring a single half-inch hole in the dash. It is operated by pulling on the "T" handle and locking it in any position by a slight twist. Its handiness and convenience is evident, for it places the control where it belongs and leaves the floor board of the car free for removal without disconnecting the device. The new dash control complete sells for \$2.50.

New Ignition "Trouble Shooter"

The Celco Ignition Meter detects ignition trouble of any nature, using a simple "terminal to ground" test that can be made by anyone and get absolutely accurate results. It takes the guess work out of locating ignition faults and instantly tells you the condition of your entire ignition system—coil, distributor and spark plugs. A tire gauge is no more essential car equipment than a Celco Ignition Meter. Strongly made, it can be carried in the tool kit without fear of breakage. It is being used successfully by famous race drivers, electricians and mechanics, as well as car owners.

New Car Coming

Following closely the numerous rumors which have been current since Leland F. Goodspeed joined the Commonwealth Motors Company as vice-president and chief engineer, it is now a certainty that a

new car is to be produced by this organization to be exhibited at the New York and Chicago National Automobile Shows.

While nothing definite in the way of the character of this vehicle is announced, it is presumed that Mr. Goodspeed will again lend his twenty-odd years of experience and reputation to the building of a high-grade product.

This fact is apparent in the news that this new Commonwealth product is to bear the name of the "Goodspeed."

New Defiance Products

Two valuable motor car accessories have recently been placed on the market by the Universal Products Company, 16 California Street, San Francisco. They are the Defiance thief-proof radiator cap, which protects the motometer, and a robe lock, which is also a Defiance product. The radiator cap need not be removed to fill the radiator with water, a quarter turn of the upper lid opening the cap. It is of white metal, nickel-plated, and sells at \$3.50 for Ford cars and \$4.50 for all other makes. The robe lock is insurance against the theft of coats, blankets or baggage. These may be locked to the rail in the tonneau. It is even possible to lock the steering wheel and control levers with this accessory. It is a nickel-plated, eight-tumbler lock and sells for \$3.00.

BRIDGEPORT

We supply everything necessary for the complete decoration of correct motor car interiors.

THE BRIDGEPORT COACH LACE CO., 806 Wood Avenue, BRIDGEPORT, CONN.
New York Show Rooms: 1755 Broadway
SCOVILL IRON STORE CO., San Francisco, Los Angeles, Seattle

Motor Land's
Automobile Show Number
in the mails February 5th, a complete review of automotive development.

DIAMOND ROLLER CHAIN

An Efficient and Positive Power Transmission

WRITE FOR CATALOGUE

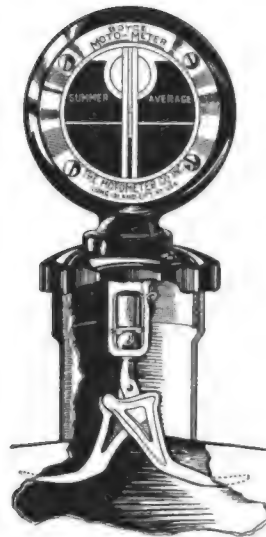
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CONVEYING, ELEVATING, SCREENING
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MACHINERY

SAN FRANCISCO 660 Mission Street SEATTLE 558 First Ave. So. PORTLAND 67 Front Street. LOS ANGELES San Pedro & E 3rd St.

Protex Moto-Meter Lock

HANDCUFFS YOUR MOTO-METER
TO YOUR CAR
—FITS ANY CAR



MADE IN CALIFORNIA

No keys to lose or forget.

No Lock to rust or get out of order.

No Bars to fall off or rattle.

A positive insurance against theft or loss of Moto-Meter or cap.

Does not change appearance of car.

Put a Protex on your Moto-Meter and stop worrying. A child can put it on but a shop must take it off. No inconvenience in filling radiator. For sale by all Dealers and Garages for \$2.00.

PROTEX MOTOR METER LOCK CO.

Phone: Market 9183

701-709 Golden Gate Ave. San Francisco, California

Exide

BATTERIES

A Service to Help You Conserve Your Battery

Perhaps the first thing an EXIDE Service Station can do for you is to show you how to save the time and bother of regular visits by taking care of your own battery.

Call at the nearest EXIDE Station and let them demonstrate how easy it is for you to test your battery and put in water. To neglect these things is to invite expensive trouble.

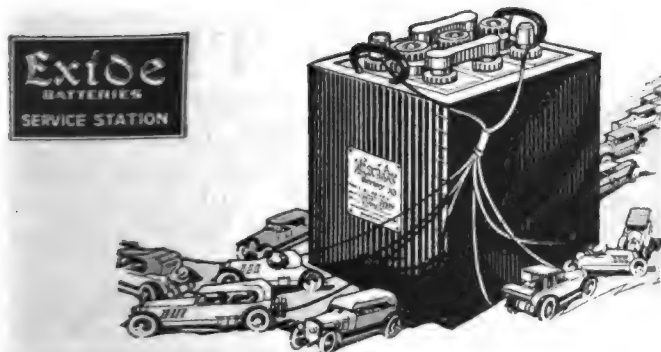
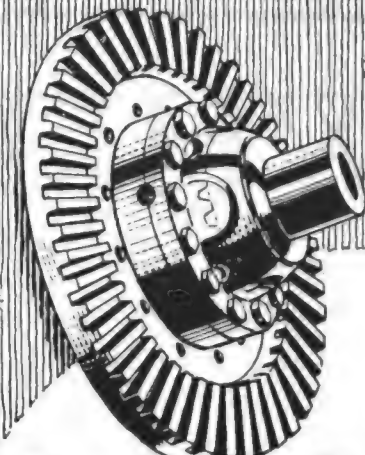
If charging or repairs are necessary, these Service Stations are manned and equipped to put your battery in the best possible shape.

When you need a new battery, there's an EXIDE built to give you the maximum combination of power, dependability and long life.



We would like you to feel that every EXIDE Service Station will help you get the most out of your battery.

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BE SURE that all replacements are genuine, not imitation parts.  

It is the only sure way of having quiet, smooth-running gears that will wear on and on. We can supply your dealer, repair or garage man, immediately, with the genuine.

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1247 Van Ness Ave.
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Los Angeles
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COLYEAR
MOTOR SALES
COMPANY

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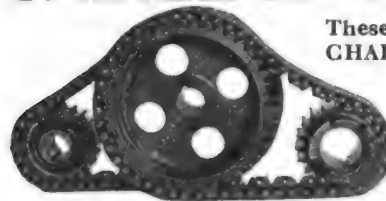
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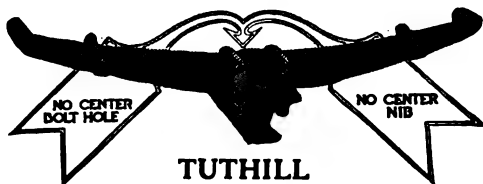


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ready to be installed in your car. Order direct or through your garage.

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Manufactured by
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"PYRO"

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Can not Freeze

Is not damaged by overheating



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De Luxe . . \$10.00	Perfection \$15.00
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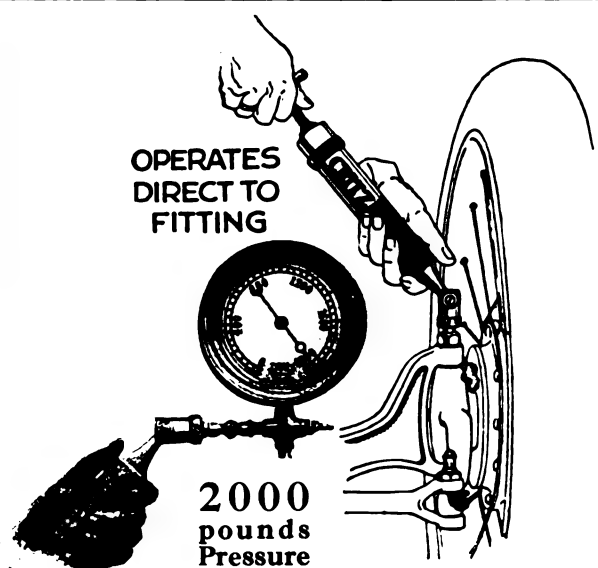
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2000 pounds Pressure

Don't merely lubricate —

CRITZ

YOUR CAR

The many objections to other systems of lubrication are overcome in CRITZ, the perfected *super-pressure* system. CRITZ eliminates fuss, muss, greasy hose, tiresome unwinding, delay in making connections, and removes all possibility of faulty lubrication. Operating direct to the fittings with CRITZ 2000 lbs. pressure, all bearings can be more thoroughly lubricated in less time and with less effort than by any other known method. Yet CRITZ can be easily installed by anyone in a few minutes. Ask your dealer for a demonstration or write us direct for complete information.

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*They not only insure safety, but will soon pay
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which is being demonstrated to such large users
of trucks as—*

Associated Oil Co.,

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For California Tops and Bodies

DON PEAKE

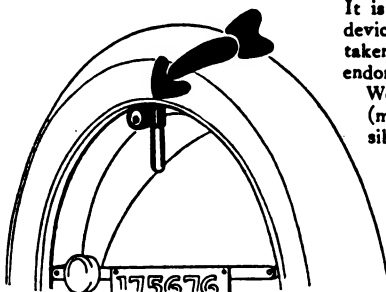
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Hughes Tire Lock



This lock may be purchased
from your dealer. Price, \$5.00

It is a smooth, highly finished
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taken off in an instant. It is
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Works on the valve stem
(making it practically impos-
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tire carriers having a
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These are made to fit all cars

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Known for
Comfort, Quality and
Convenience

Price Complete
\$67.50

Order from your dealer;
if he cannot supply you
order direct.

MANUFACTURED BY

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We have a department for the collection of overdue
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Write or phone for particulars.

AUTOMOTIVE FINANCE CORPORATION

Phone Sutter 563

609 Merchants Exchange

San Francisco

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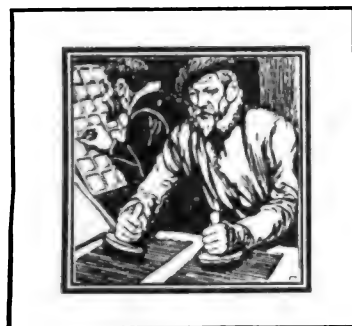
I WANT printed publicity that will properly reflect the high quality of my merchandise—not a mere printing job. I want my printing to pay for itself in real orders.”

You *can* make your printing pay—you *can* reflect the high quality of your merchandise—you *can* enhance your business prestige if you employ a printer who knows how.

It is not always costly cuts and art work and high priced paper that make a printing job successful. It is the skillfully prepared and properly presented message that “gets over” to the man who needs your goods.

We will be glad to tell you how it can be done.

MAY we send you a rather impressive folder that portrays several specimen advertisements together with information that will assist you materially in planning your next printing order? No charge. Phone or write.



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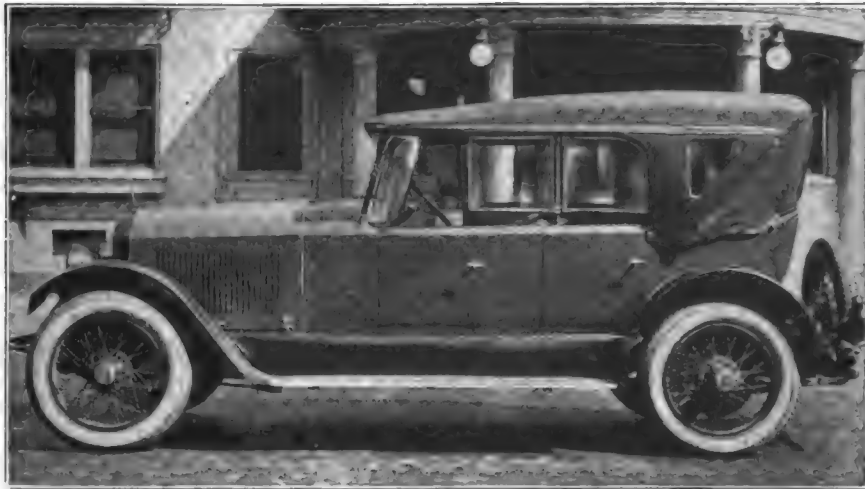
San Francisco

Adopted by THE CALIFORNIA STATE AUTOMOBILE ASSOCIATION

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WRITE
FOR
DESCRIPTIVE
FOLDER



FOR
ALL
TOURING
CARS

Cole 8 Touring Car fitted with ALL-ANGLE AND ALL-WEATHER TONNEAU SHIELDS AND DEFLECTORS, showing wings fully extended, enclosing both front and rear seats.

By a movement of the hand the wings can be instantly arranged to enclose either the front, rear, or both seats; or folded out of the way if desired. ¶ With the ALL-ANGLE TONNEAU SHIELDS installed on your car there is no further need of the unsightly storm curtains which have caused you so much annoyance in the past—"You have all the comforts of a closed car at a fraction of the cost."

ALL-ANGLE AUTO SHIELD CO.

1619 PINE—West of Van Ness

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SAN FRANCISCO, CALIFORNIA

Telephone PROSPECT 3697

UNION AND ARISTO

GASOLINE MOTOR OIL

ARE TO YOUR MOTOR
WHAT STEAM IS TO
THE LOCOMOTIVE.

UNION OIL COMPANY OF CALIFORNIA.

[In writing to advertisers please mention MOTOR LAND]

All good things are imitated, but look inside for the name "DELUXE." It is there for your protection.



A Wonderful Opportunity

—and there's no competition

Every motor equipped with ordinary heavy stock cast pistons or with aluminum pistons will be vastly improved by the installation of DELUXE pistons.

The saving in gas and oil alone will, in a short time, pay the cost of installing DELUXE pistons. Read what Mr. Demster says in his letter about these savings.

DELUXE pistons are easy to sell when motors are re-ground or rebored, but better than that, they make just as great an improvement in new cars—therefore every motorist is a prospect.

And DELUXE dealers have no competition. When it becomes a question of piston replacement simply for the sake of making a sweeter running, more economical motor, the answer is always DELUXE pistons. There's no use changing pistons unless you put in DELUXE.

DELUXE
LIGHT WEIGHT CAST IRON PISTON
"The Successful Light Weight Piston"

Here's An Interesting Letter

Kansas City, Mo., August 20, 1921.
Clark-Turner Piston Company,
Los Angeles, California.

Gentlemen:

Several months ago a local Doctor had me regrind his Dodge cylinder block and fit it with new oversize pistons, pins and rings. As it is customary with me to use DELUXE Pistons in all of my regrinding jobs I naturally put them in, although the Doctor stated that the price was excessive as compared with the cost of installing the factory pistons.

However, knowing the Doctor had always kept a record of his operating cost, I made him a proposition something to the following effect: I would take the saving in gas and oil for four months for my account. This he accepted. Two weeks later the Doctor came in to see me, stating that he did not like to have an unpaid bill and asking if I would accept his check. I told him this would be entirely satisfactory but at the same time I wondered "why the hurry?" I was quite willing to wait the four months of our agreement.

Here is the Doctor's reply: "The average mileage to the gallon of gas before you reground my block and equipped it with DELUXE Pistons was 12 1/4 miles—and now I am getting 23 3/4 miles to the gallon."

This is not an exceptional case, I assure you, as I have many others who do as well or better on the increased mileage of gas and oil.

Yours very truly,

W. R. DEMSTER.

The opportunity for you in this field is unlimited and non-competitive, and we are doing all we can to educate motor owners on the importance of DELUXE Light Weight Cast Iron Pistons, so you can do more business. Our campaign now includes the Saturday Evening Post, reaching approximately every automobile owner in the United States.

Now is the time for you to start, if you are going to get the greatest advantage from the nation-wide publicity we are giving DELUXE pistons. Start with the next automobile owner you see. Tell him why his motor needs DELUXE pistons, no matter in what condition his present pistons are. We can back you up with 24-hour delivery service.

DELUXE pistons are manufactured and carried in stock for more than 1,400 makes of automobiles, trucks and tractors.

Patented and Manufactured by

Clark-Turner Piston Company

INCORPORATED

Los Angeles, California

DELUXE pistons and the coreboxes for making same are thoroughly protected by U. S. and foreign patents. We intend to vigorously defend our rights and prosecute all infringers.

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From Seattle to San Diego *the Same Good* **AUTO SUPPLIES** at saving prices.



At convenient locations in every larger city the entire length and breadth of the Western United States "Western Auto" has established large branch stores to adequately care for the needs of every motorist.

The vast purchasing and distributing facilities of this largest organization of its kind in the West make possible prices that are substantially lower.

No monument could speak more for the success of a business policy than this gigantic organization of 40 stores— all working in harmony to one purpose— to serve promptly and efficiently the motoring needs of half a nation.

Come in or send for our large free catalog.
Mail orders are promptly and efficiently
filled by all stores.

WESTERN AUTO SUPPLY CO.

"Everything for the Automobile"

IF IT'S FOR AN AUTO
WESTERN AUTO HAS IT

THERE'S A WESTERN
AUTO STORE NEAR YOU

40 Stores

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at the
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Be sure to see the OLDSMOBILE TWIN FOUR models — the car that out performs and out demonstrates all competing cars.

Its record proves its *power, durability and economy*. You can judge of its beauty yourself.

Don't forget the Oldsmobile Twin Four record performance of 1000 miles in 899 minutes on the Cota'i Speedway. Remember that every Twin Four will show as pleasing performance for you.

J. W. LEAVITT & CO., Distributor

Prospect 3400

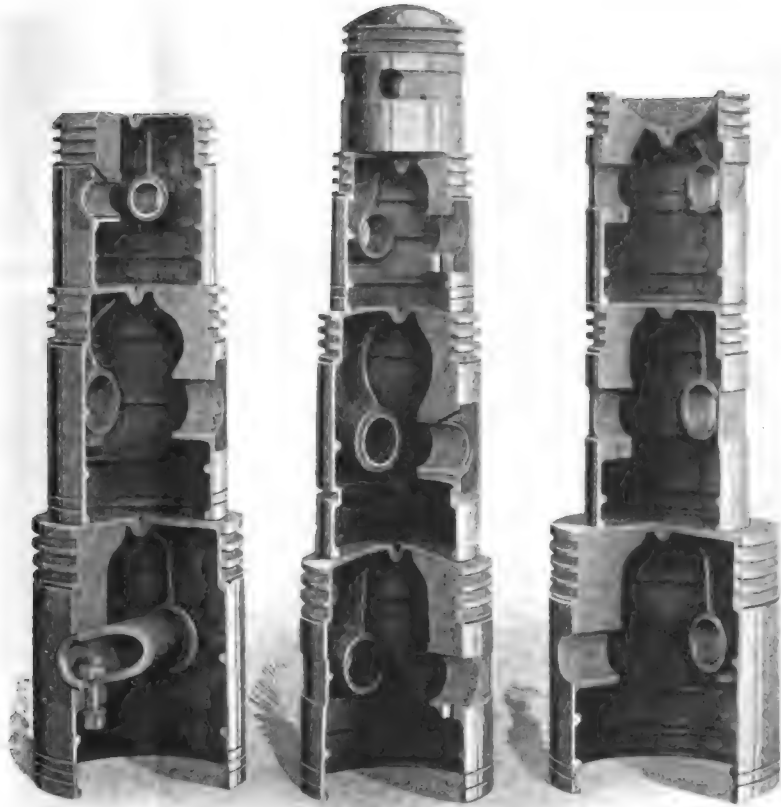
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BRANCHES—LOS ANGELES AND SAN DIEGO

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THE result of years of experience obtained in automotive cylinder regrinding in which the every day problems of motor troubles are presented and overcome in a practical manner.

WOODWARD semi-finished pistons and wrist pins have stood the test for over five years and have PROVEN their MERIT.

A PRODUCT backed by such a record makes selling easy. Why don't YOU secure the PROFITABLE business in your locality by stocking WOODWARD PROVEN PRODUCTS?

Have you received our up-to-the-minute catalog? We will gladly mail you one upon request.

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Incorporated

MANUFACTURERS OF

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Member: California Automobile Trade Association

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The Original Depression Type Protected By U. S. Patents

1922 New Broad-Flattened Tread

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The entire Non-Skid Design forms a large, powerful Suction Depression resulting in an Automatic Grip, which holds surely and firmly. This Grip releases without retarding effect, because the length of the grooves allows one edge at a time to roll free, instead of the whole depression rudely pulling straight away.

KEATON TIRE AND RUBBER COMPANY

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Phone Prospect 324

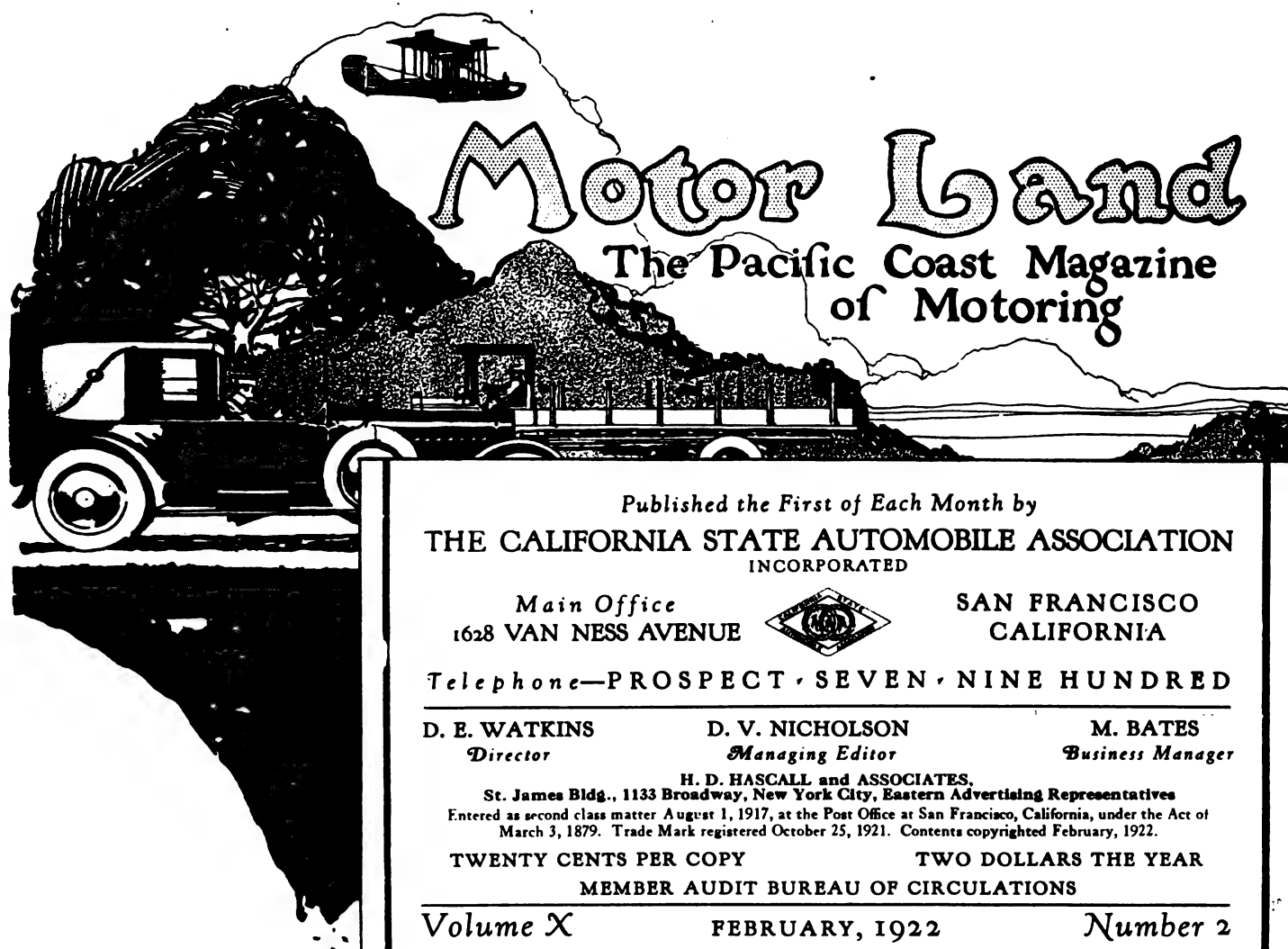
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The Pacific Coast Magazine of Motoring

Published the First of Each Month by
THE CALIFORNIA STATE AUTOMOBILE ASSOCIATION
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Main Office
 1628 VAN NESS AVENUE



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MEMBER AUDIT BUREAU OF CIRCULATIONS

Volume X FEBRUARY, 1922 Number 2

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The Distinctive Green Visor Lens

THE Macbeth Green Visor Lens is given the highest rating by legal authorities everywhere.

Officers of the law everywhere recognize it instantly. The driver is never stopped or troubled.

And the way is brightly, safely lighted because the Green Visor Lens concentrates the light on the road where it is wanted. No glare is permitted. The Macbeth prisms bend the light down far ahead below eye level, and spread it in uniform brilliance. The Green Visor is the most distinctive lens in motordom—a protection at night, a decoration by day.



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SERVICE MOTOR TRUCK
INTERNATIONAL TRUCK
GARFORD, VIM

PRICE,
per pair **\$5.50**

Plenty of Legal Light

The LIBERTY LENS

The Macbeth-Evans Company's latest achievement is the LIBERTY AUTOMOBILE LENS. During the half century in which Macbeth-Evans has been building the world's lenses no product bearing their name has ever failed to add to its prestige.

With this record the LIBERTY LENS needed no introduction. Its merit known immediately, the LIBERTY LENS at once became standard equipment on more cars than any other lens.

Long Range---Splendid Side Lighting

300 to 400 feet range—no glare—and all the curves and ditches as brightly lighted as the middle of the road! Six perpendicular prisms on the front surface of the lens spread the light. Seven transverse prisms in the rear bend the rays under a line 42 inches high, 75 feet ahead. A safe, remarkably efficient lens—legal everywhere.

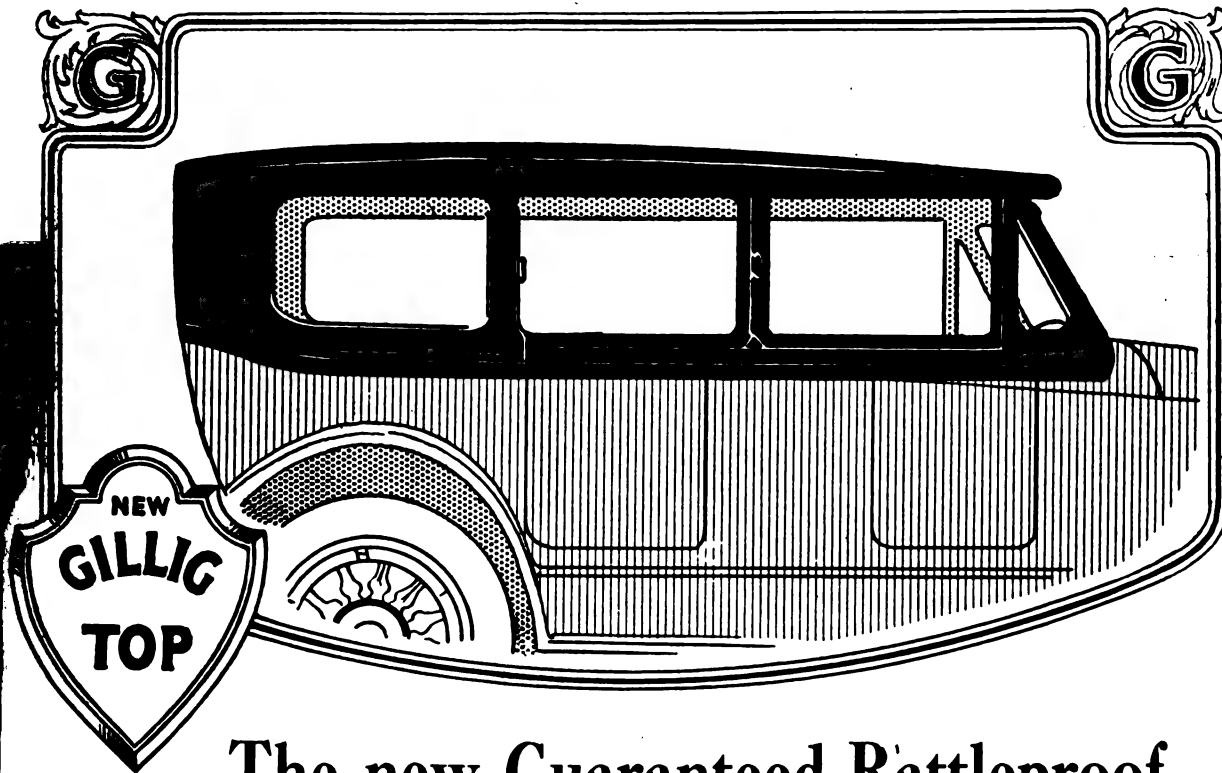
PRICE,
per pair **\$3.25**

For Sale by All Jobbers and Dealers

Macbeth-Evans Glass Company

New Call Building, San Francisco





The new Guaranteed Rattleproof Gillig Top—*the best in value*

Custom built and designed to fit any make or model of car. With the Gillig Top you can change from the touring car to sedan in a minute's time. A special feature of the Gillig top is the patented locking brake that securely holds the plate glass panels in any position. It is easy to operate, always secure and guaranteed rattleproof.

You should see and compare the new Gillig Top with any on the market before you place your order. You can't get Gillig features in any but a Gillig Top and our increased manufacturing facilities permit us to build not only a much finer top, but a careful examination will soon convince you that you are getting more for your money.

A complete organization for repairing, painting, refinishing and coach work.

In addition to specializing in the construction of Gillig Tops we maintain complete and fully equipped facilities for repairing, painting and refinishing all types of cars. We carry a distinctive line of imported and domestic materials—linens, tapestries, velours, etc., for interior coverings suitable for Limousines or Town cars.

We handle the most particular and difficult jobs of body designing and painting.

Our service in this department is maintained at a very high standard—we are ready at a moment's notice to handle any class of work, regardless of how large or how small.

Due to our extensive facilities for handling all classes of work, we are able to give you not only better and faster service, but much more moderate prices.

We maintain a tow-car service for your convenience.

REPAIRING WRECKED CARS OUR SPECIALTY

Gillig Bros.

Coach and Body Works

POST AND FRANKLIN STS.

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Painting

Repairing




*Hayden Lake
near Spokane—A favorite tourist's
resort in the Inland Empire*

America's most wonderful summer playground for the motorist—

THE open road calls you; the majestic scenery of the Pacific Northwest calls you; its trout streams, to be found every few miles along the road; its thirty-eight golf courses; sea beaches; national parks and forest reserves lure you to

**ENJOY YOUR FAVORITE SPORT IN
THE FINEST SUMMER CLIMATE
ON THE CONTINENT**

Bright, cool days with a sound, restful sleep every night, in the

**Great International Pacific Northwest
Oregon, Washington
and British Columbia**

This summer playground is at your doors. You may take your car any day and drive all the way. There is no other such drive in America. There are excellent hotels at very reasonable rates and camping places everywhere. If you wish further information

Write for free illustrated booklet to any commercial organization in Oregon, Washington or British Columbia, or to Herbert Cuthbert, Secretary, Pacific Northwest Tourist Association, maintained by government funds to give free information, L. C. Smith Bldg., Seattle



A fair catch by a fair motorist in an interesting break in a day's run in the Pacific Northwest—



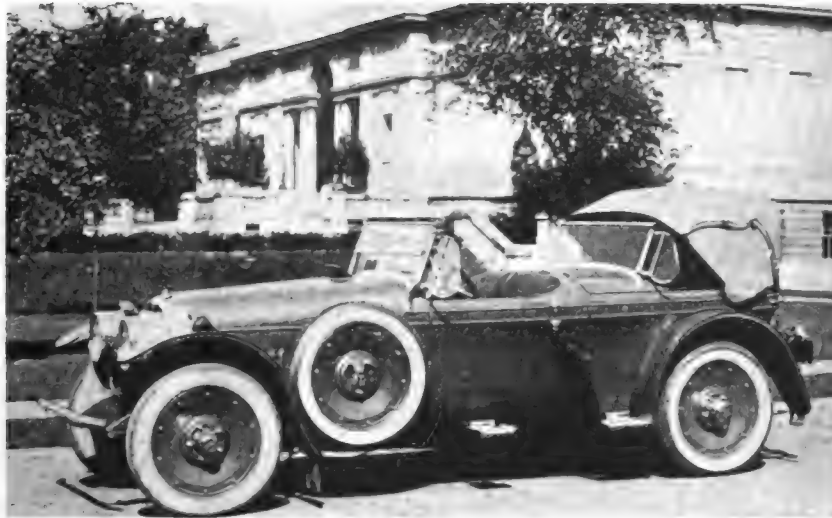
*One of the 58 Golf Courses in the Pacific Northwest
Colewood Vancouver Island
British Columbia—*

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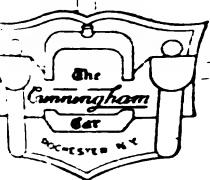
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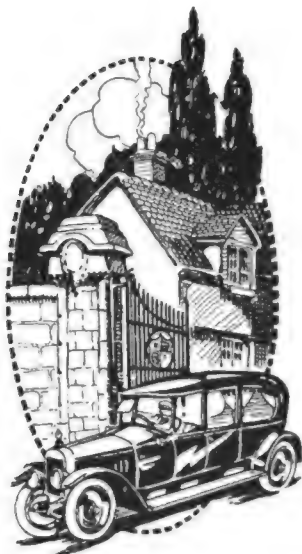
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DAYLIGHT IN MOTORDOM

By COLONEL CHARLES CLIFTON

President National Automobile Chamber of Commerce

THE wire request from Motor Land for a message concerning the automobile industry arrived the morning following the N. A. C. C. annual dinner in New York where Hon. Edwin Denby, Secretary of the Navy, summed up the business situation in a few striking words:

"It is a matter of tremendous pride to you and to me to think that through this terrible depression through which our country has been going, the automobile industry has won its way and held its own, and now I think we begin to see daylight. That is what we think in Washington, and that is what I think you think; and that is why you are here in such great numbers and with such cheery bright outlook upon the future."

The reference to daylight strikes me as a far happier and more accurate picture of the situation than the frequent reference to the convalescence of business. Convalescence is likely to carry the idea of a sickness which has left the patient worse for wear, whereas experiences of late 1920 and 1921 have left the automobile industry, at any rate, the better for wear. Convalescence suggests lying comfortably, if irritably, in bed and being visited by friends laden with jellies, fruit and chicken, but that is by no means the condition of business today, which is going to have to get out and go out hard after any jelly that it may be able to obtain.

Result is Helpful

Yes, the daylight figure suggesting new hope after a rest is the proper one. The automobile industry has had in

the past 18 months some undesired rest. It was put to bed under protest, but the result has undoubtedly been helpful.

The industry made 1,680,000 cars and trucks in 1921, a decrease of 24 per cent from 1920. The wholesale value of the production during 1921 was \$1,220,350,000, a decrease of 45 per cent from 1920, but these figures are encouraging. The automobile industry can congratulate itself upon having been able to obtain that much business in a time of depression, and it is in a healthier condition for having reduced its output than if it had tried to equal the 1920 figure, which included considerable left-over demand from the war years, when the public was motor starved.

Though production has slowed down, the actual use of cars by the public has increased. The need for the greatest economy in conducting one's affairs has evidently promoted the use of motor transportation. It is significant that the past year showed the greatest gasoline consumption on record. Returns from the various States indicate that registration has increased in most sections and that the final figure for 1921 will show 10,000,000 cars and trucks in use.

It is customary to think of the automobile business in terms of output, but that is only one department of its activities.

It must supply repair parts. It includes 36,000 dealers. It embraces 45,000 repair shops. With 10,000,000 motor vehicles on the road, every year brings a huge volume of business of one sort or another.

Year's Greatest Progress

Your editor has asked me to "review progress." Perhaps the greatest progress during the year has been in service to the consumer. The spectacular phase of this has been in a downward revision of prices, culminating in a number of new schedules at the time of the New York Automobile Show. This upward sign has been the reflection of strenuous effort on the part of the factories to clean up the inventories bought at war time prices, to introduce more factory economies and to anticipate a renewed volume of business.

Service is being provided the owner with greater efficiency in his own home town. During the war and immediately following, with scarcity of good mechanics and difficulty of getting materials, the service provided the car owner was in many cases highly unsatisfactory. The return of normal conditions is permitting the local dealers to render better service, and the manufacturers are doing their utmost to lend aid in this direction.

Each owner has his individual problems and the industry has not reached 100 per cent in caring for this department of its work, but I believe that much progress has been made and that the army of 10,000,000 motorists will find their need increasingly well cared for.

The next five years will probably be the most satisfactory which the motor public and the industry has ever enjoyed. We shall be on a peace time basis and we shall, taking example from President Harding, be proponents of "conservative optimism."



*One of the Monuments
of Acropolis,
Athens, Greece*

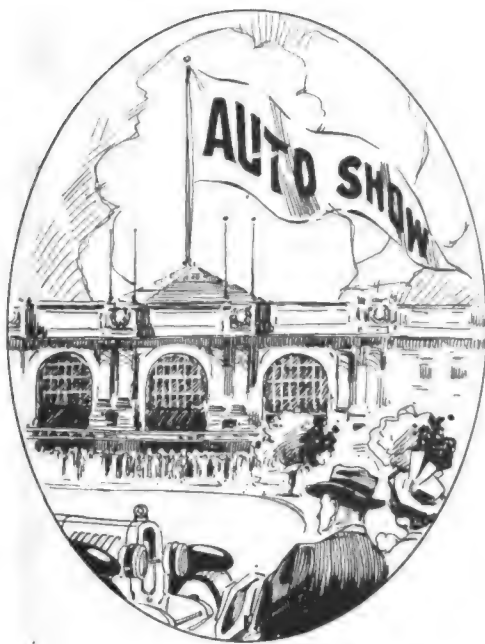
**TOURING IN
FOREIGN
LANDS—
EGYPT**

*The Parthenon
Athens's Temple*



The Oracle at Delphi

PHOTOS BY ALEXANDER STEWART.



THE PACIFIC AUTOMOBILE SHOW

Where Motordom's Finest Await Your Command

By VONARD FRASER

FEBRUARY and the Automobile Show! Just as the cold weather begins to thaw out a bit and you begin to look forward to the touring season along comes the big event of the year in automotive circles.

The sixth annual Pacific Automobile Show in San Francisco's Civic Auditorium marks a new era in the automotive trade. The day of car shortages has passed. With it has gone the wildcat schemes and the frenzied finance that always characterize a war period. We are entering now on a time of sane business methods, of well-manufactured machines, and if coming events cast their shadows before, of prosperity.

Automobile salesmen have turned into salesmen once more. No more plain order takers without the ability or inclination to "go out and get 'em." The wheels of industry are oiling up for a period of steady development.

The automobile show means more than a mere exhibition of things mechanical. There lies behind it one of the most powerful industries in the world. And this powerful industry is so linked up to modern civilization and twentieth century ideas and progress that it no longer may be grouped among the luxuries or be looked upon by bankers as one of the non-essentials.

The automobile has made life far easier than it was a score of years ago. It has increased efficiency in business. It has solved many a housing prob-

lem. It has improved our schools. It has contributed to health. It has given luxuries to those who have long gone without. It is the very spirit of the age.

More Work in Better Fashion

Nowadays the doctor, the minister, the lawyer, the public official, the teacher, can do more work in a better fashion than before the advent of the automobile. A man may live away from the crowded city and yet, in time, be as close to his office as he was in the days he was crowded into a tiny hall bedroom with a big rent bill to pay. It has developed the outskirts of the city into districts of beauty. It is the backbone of our western real estate booms.

To the family the Sunday outing in the motor car brings a bit of the California out-of-doors that makes for rosy cheeks and healthy circulation. When the world and his wife own motor cars, the doctors will have to look for other fields of activity.

Out in the Civic Auditorium, San Francisco, under a canopy, oriental in design and gorgeous in color, you will step out of the humdrum of every-day life into a play-world of beauty. Through every Chinese arch that spans the entrances to the main hall you may glimpse these symbols of our age of transportation. Haughty limousines in colors dull and bright, sporty racing models that tug at the leash and long to step away over the

California hills, family cars for Pa and Ma and Jack and Jenny and the baby, little roadsters, big roadsters, plate glass affairs for all weathers, sedans and sedanettes, coupes and coupelets, broughams and landaulets, all are there waiting for their future owners to pick them out and drive them away.

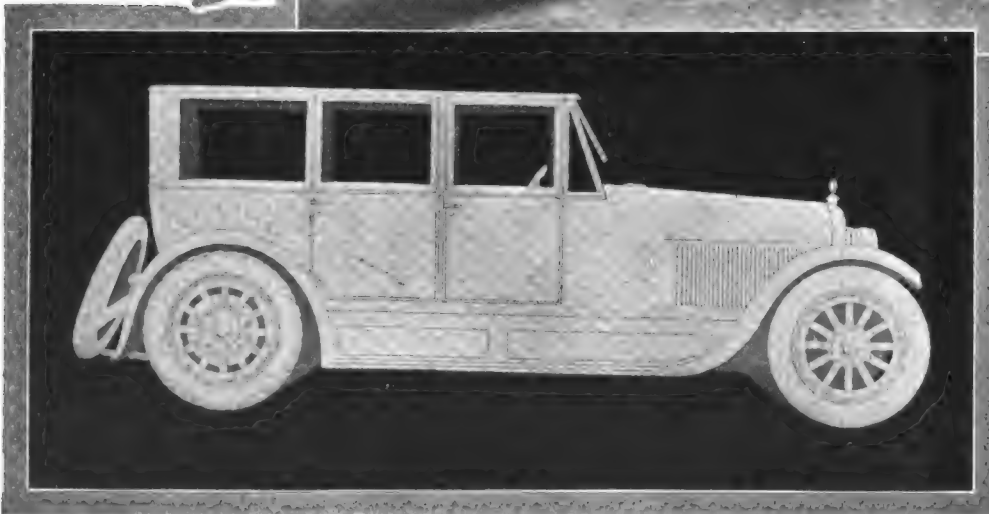
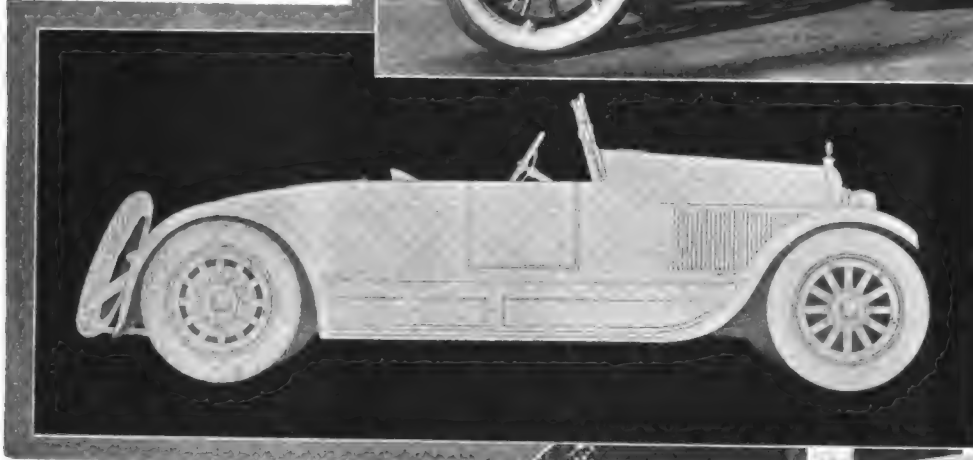
National Shows Contribute

The New York and Chicago shows have contributed their bit to the Coast display. The new models which were features of the great eastern exhibits you will find at the auditorium. And the new cars are better products of better manufacturing methods than those of a year ago and more. Yet in lines you will find that the ultimate in automobile design has almost been reached. The day of "something radically different" has passed and the desire for the bizarre and unusual in motor cars seems to have passed.

The principal motif of the new order of automobiles will be found in the many little refinements that add to the comfort of the passenger. One concern has tailored the seats to conform to the curvature of the body. Riding in this car is like riding in your own overstuffed easy chair at home. For many years automobile manufacturers spent all their time on the mechanical end and failed to take note that the comfort of the passenger was an element to be considered as well.

Dignity and Style

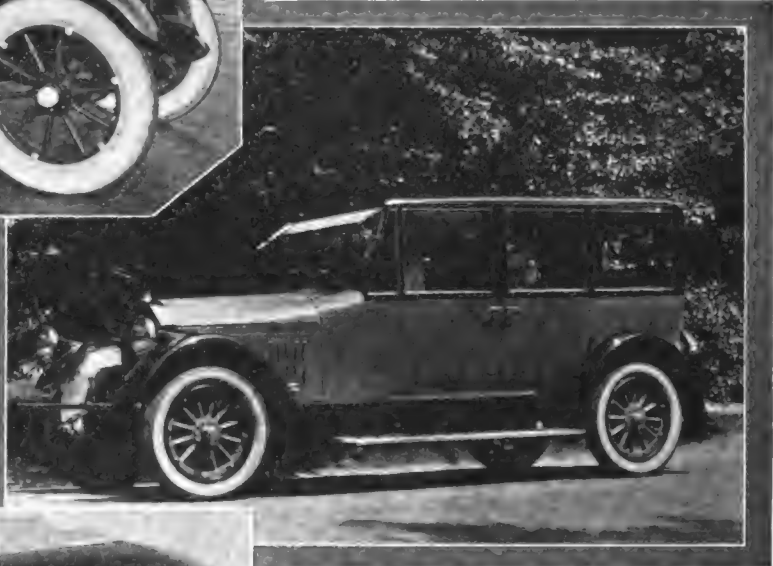
Open and closed models of the Stephens Salient Six are shown on the right. Two 1922 Jordan offerings appear on the left.





Four Celebrities

The photos on the left show the attractive 1922 Velie, open and closed models. On the right appear the luxurious offerings of Pierce-Arrow.



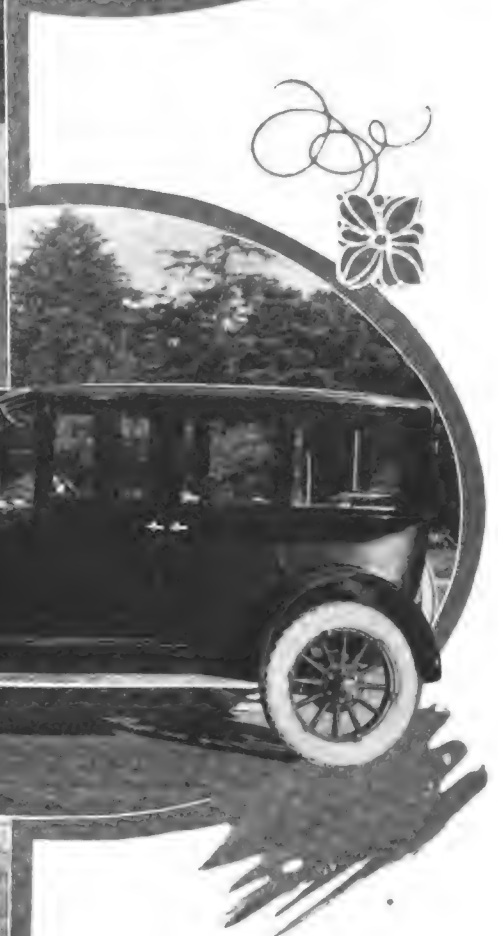
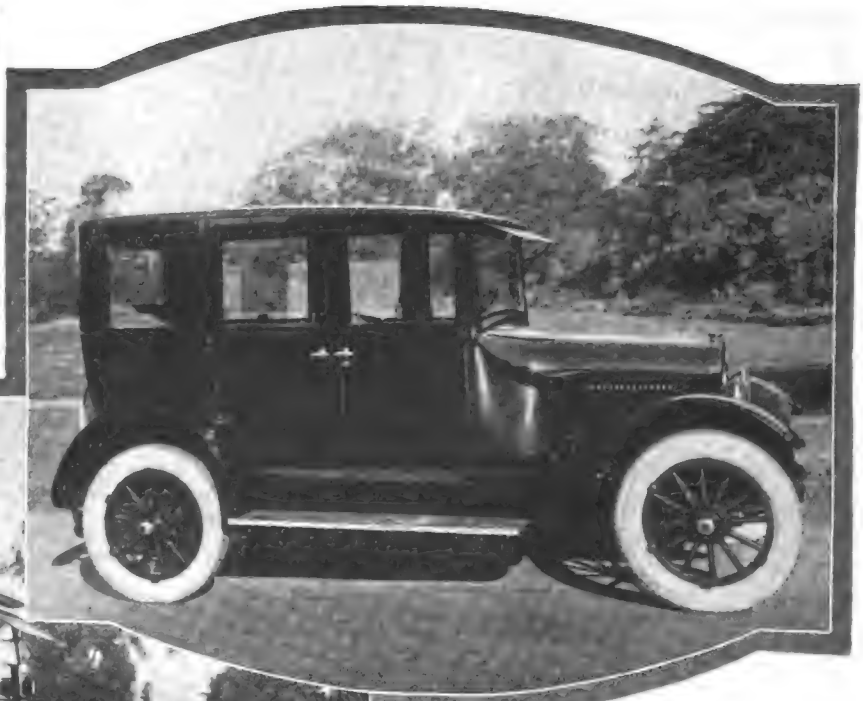
Harbingers of Spring

The two pictures on the left show the 1922 Franklin Sedan and Touring Car. On the right (above) is the Studebaker Light Six and below the Big Six Touring Car.



Four of a Kind

Rains and sharp winds have no terrors for these sturdy knights of the road. The models on the right are Buicks, the four-cylinder 5-passenger sedan above and the six-cylinder sedan below. On the left are seen the 1922 Reo Coupe and Sedan.



A Foursome of Beauty and Power

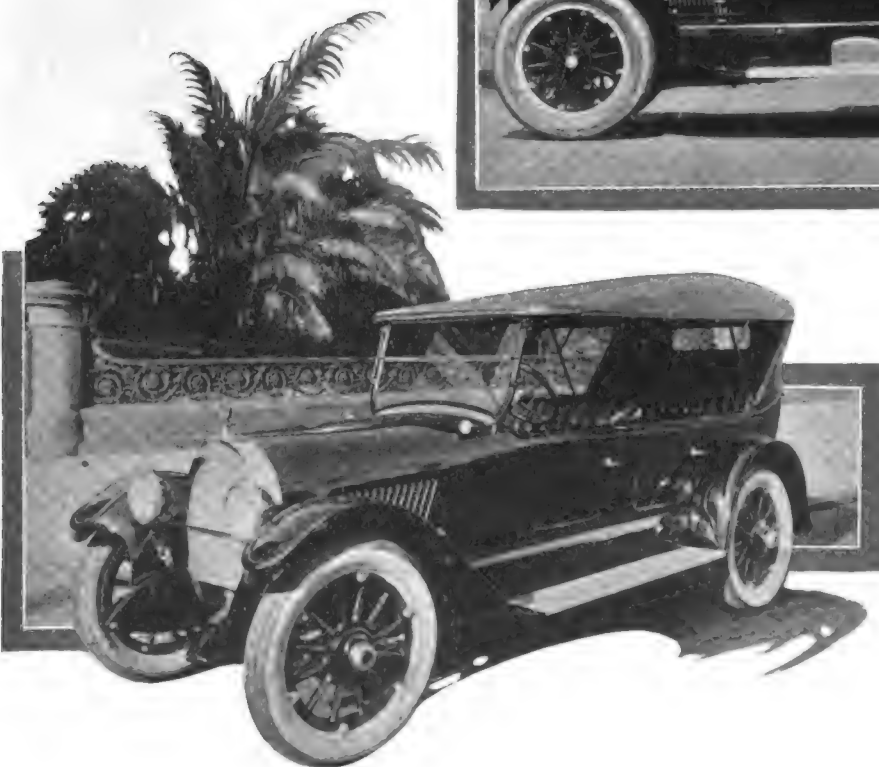
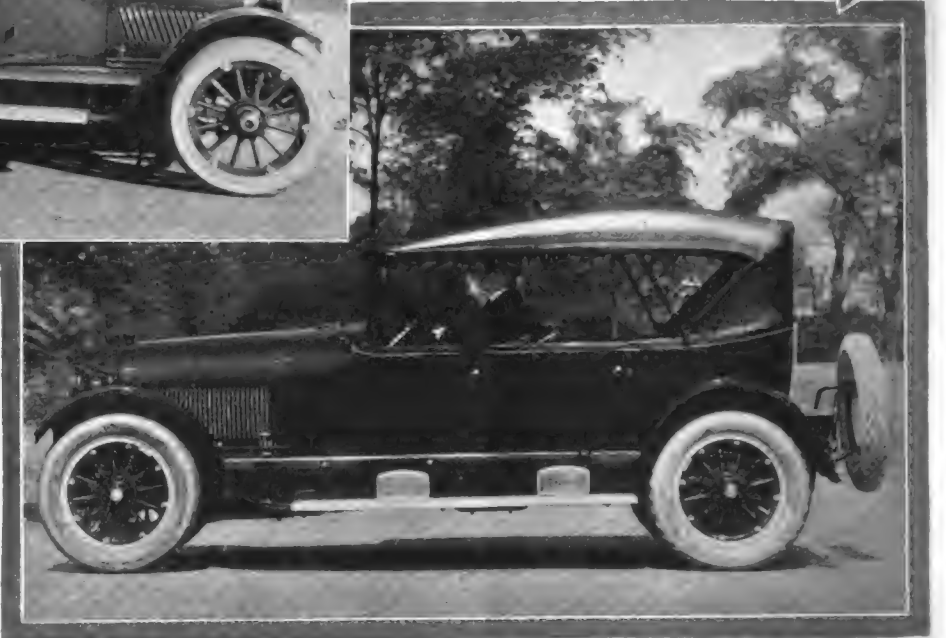
From top to bottom:

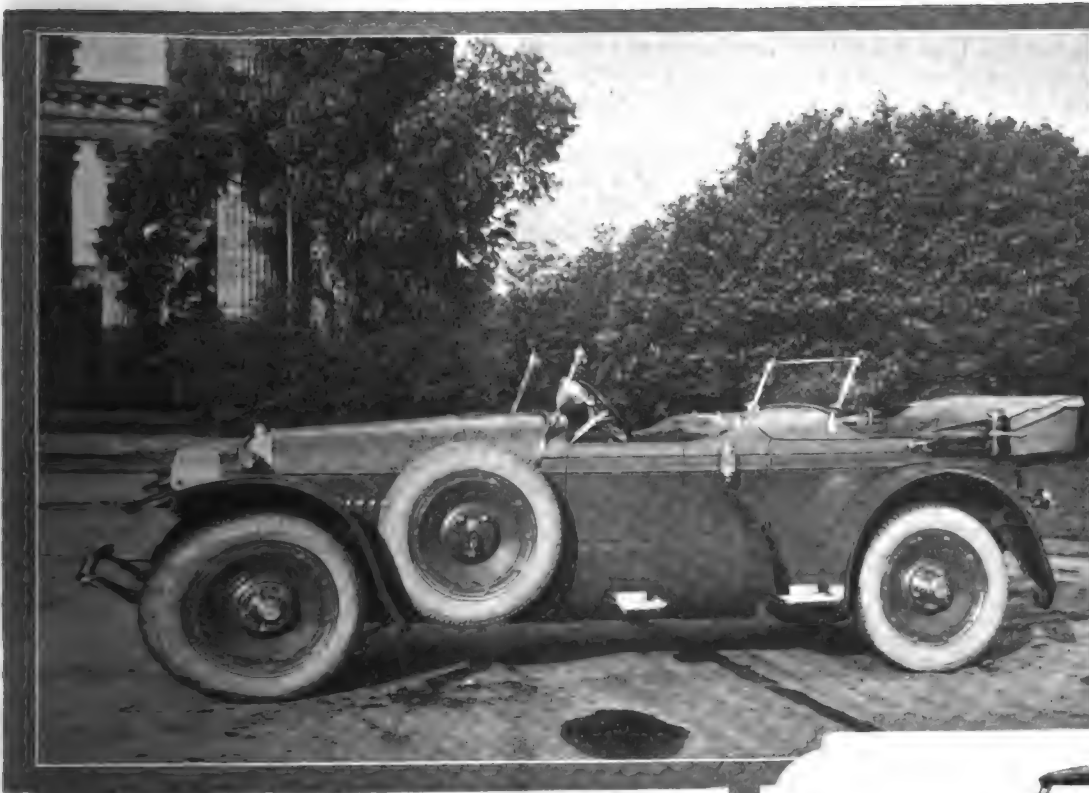
Cadillac "61" Victoria

Oldsmobile "43" Four-cylinder Coupe

Cadillac "61" Phaeton

*Oldsmobile "46" Eight-cylinder
Touring Car*

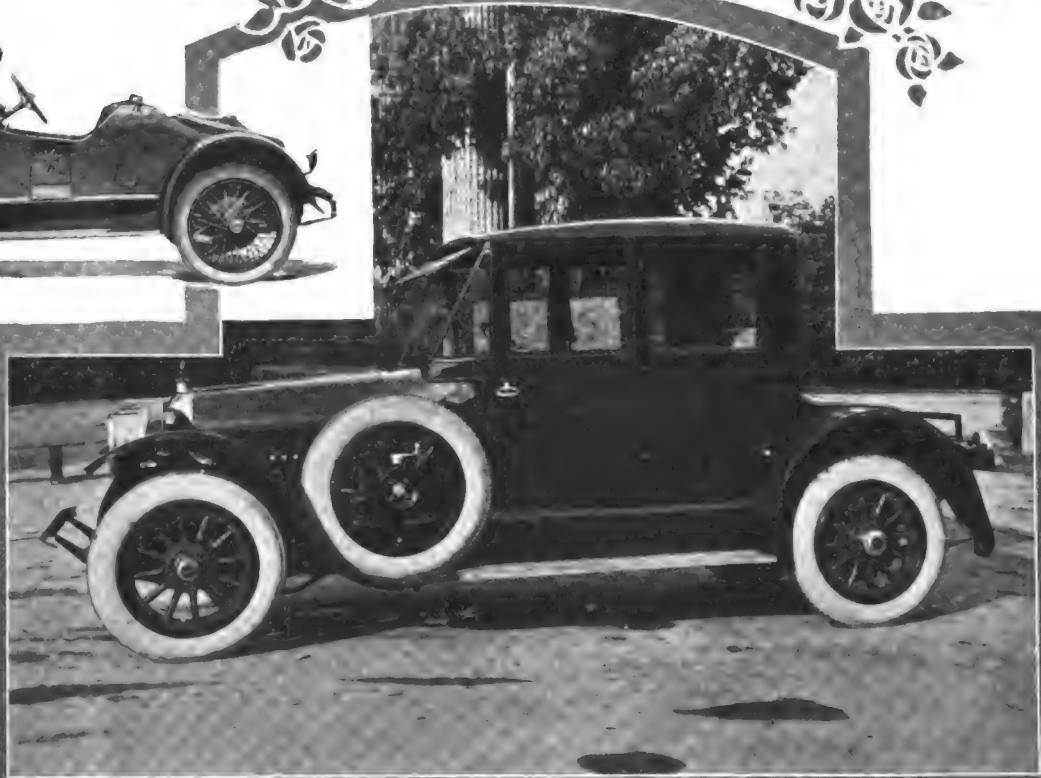
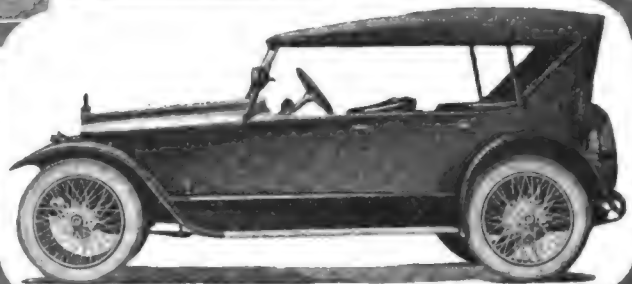




Knights of the Road

*Templar spring
entries are shown
in the center
photographs.*

*Dignity and beauty
are expressed in
the 1922
Cunningham
models shown above
and below.*



But things are shaping differently now. The straight lines of the cushions have given way to more comfortable backs and seats. The spring suspensions have been improved so that even a corduroy road has no worries for the motorist. And in the closed cars this has been carried to the degree that you will find a vanity case here and a match safe there or a lighter, and a mirror or two and perhaps a fan, and these refinements haven't added to the price of the cars because they are lower as a whole today than they have ever been before. Therefore the motor car buyer of today can be assured of a better bargain than he has ever had tempting his pocketbook in the history of motoring.

Third in Importance

The Pacific Automobile Show is now ranked as the third in importance in the country. It takes precedence over Detroit, the home of the motor car, over Philadelphia and Boston and over Baltimore and New Orleans. It is largely because San Francisco's automobile row "knows how" to put on such an event so that it is productive of interest and sales and because it has come to mean so much to the motor car owner and prospective owner.

Many of the leading automobile officials will be on hand for the opening of the San Francisco show. They have come to look on California as the district that admits of motoring the year round, and that means a great deal to a manufacturer who expects to keep the wheels of his factory turning every working day in the year. When the east is snowed in and motoring is an impossibility, Golden State motorists are still enjoying their Sunday spins, and the healthy registration that has been piled up by the Cal-

fornia salesmen for the winter months goes far toward proving to the eastern factory chief that California knows no season nor weather that does not adapt itself to motoring.

Practically every motor car handled in California and a few that have not been handled here as yet will be on exhibition at the Pacific Auto Show. Economy is a feature that will be noted in the models on display. The motor car buyer of today is on the lookout for a car that keeps out of the repair shop and "carries on" without too much of a drag on the pocketbook. Cognizant of this, the automotive engineers of the country have been laboring to produce cars that would be economical to run, not only for the man of average means but for the man of wealth as well.



Mechanical Exhibits

Another feature that was marked at the last automobile show was the interest shown by the visitors in the mechanical exhibits. Stripped chasses, showing the working parts of the power plants, automatic sections of cylinders, moving exhibits of every kind and color will have a prominent place in the sixth annual show. And from past experience the man who knows will tell you that these will be the lodestones of the exhibits. Whether he has mastered the intricacies of the gas engine or is only a beginner in the art of motoring the average man of today enjoys seeing the way in which the wheels go round as much as his small son who periodically takes the clock apart to locate the time of day.

The decorative scheme of the show will be Chinese in type. Yellows and golds and lacquers will be much in evidence. And there will be mandarins and fair Chinese strolling about to add life to the setting. Then there will be Chinese lanterns and urns with incense and rose-colored lights and white sunset lights and bronzes and dragons, in fact everything that might be called oriental or Chinese in its appeal.

The decorations will be the most elaborate of any show ever held in the West, but they will be used more with the idea of bringing out the motor cars themselves than being of main interest in themselves. The oriental idea will be carried out in the basement as well, where the overflow of the main hall will be found. Here George Wahlgren, show manager, plans on staging something that will be distinctly unique in character and irresistible in its appeal. It's of course a deep, dark secret, a Chinese type of secret, but it'll be worth while going in to look that over anyhow.

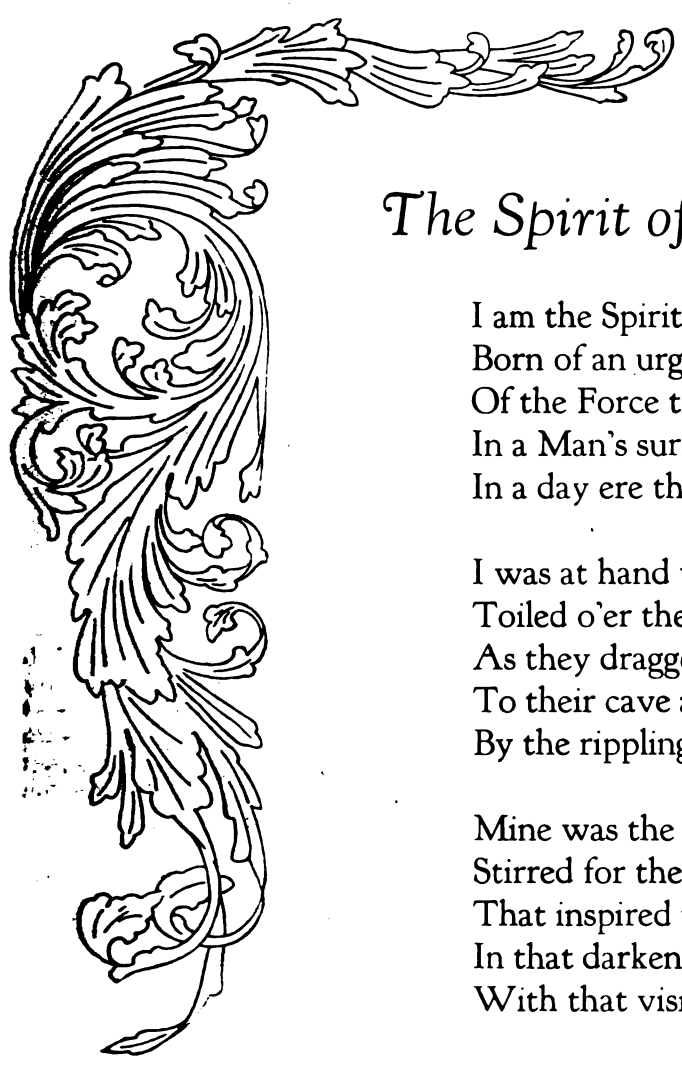
In number of exhibitors the show sets a new record. It is a fitting tribute to the growth of the industry, which has weathered the storm and has come out of the dark places more powerful than ever.

When you go and look over this brilliant array of mechanical excellence don't forget what the motor car has been to America, how it has developed the country and swept away the cobwebs of the days of slow moving transportation. Three million farmers now own motor cars and trucks. And there's a great market on the farm for the motor car yet.

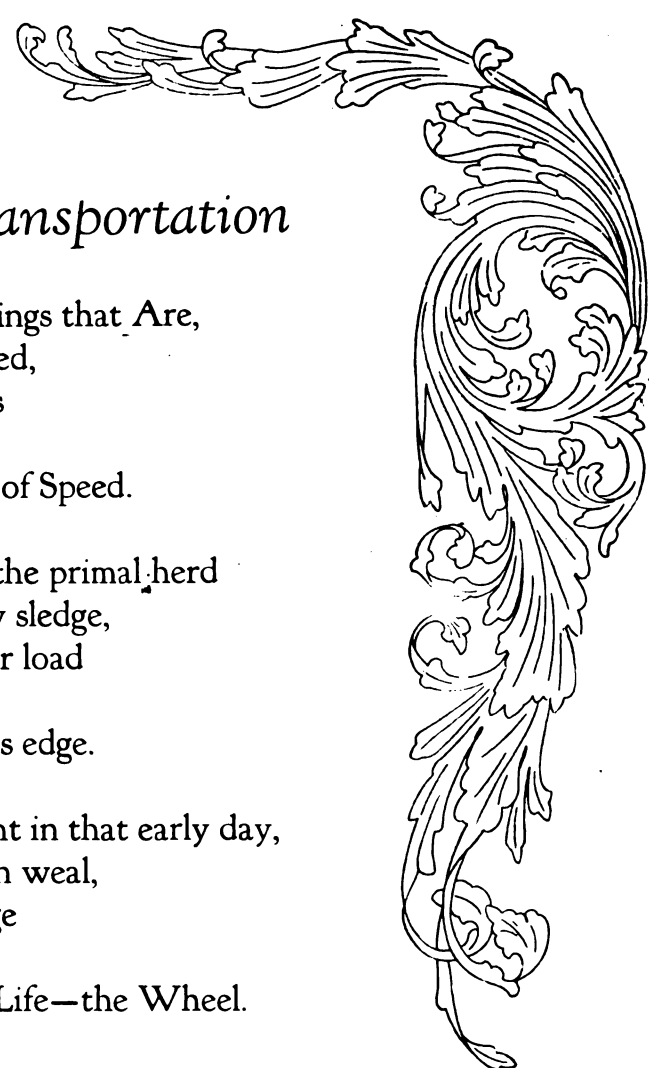
Turn to City Buyers

To the cities, however, one must turn for the great increase in motor car buyers. There is only one car for every twenty-one persons in the twelve

(Continued on page 26)



The Spirit of Transportation



I am the Spirit of Things that Are,
Born of an urgent need,
Of the Force that lies
In a Man's surmise
In a day ere the Age of Speed.

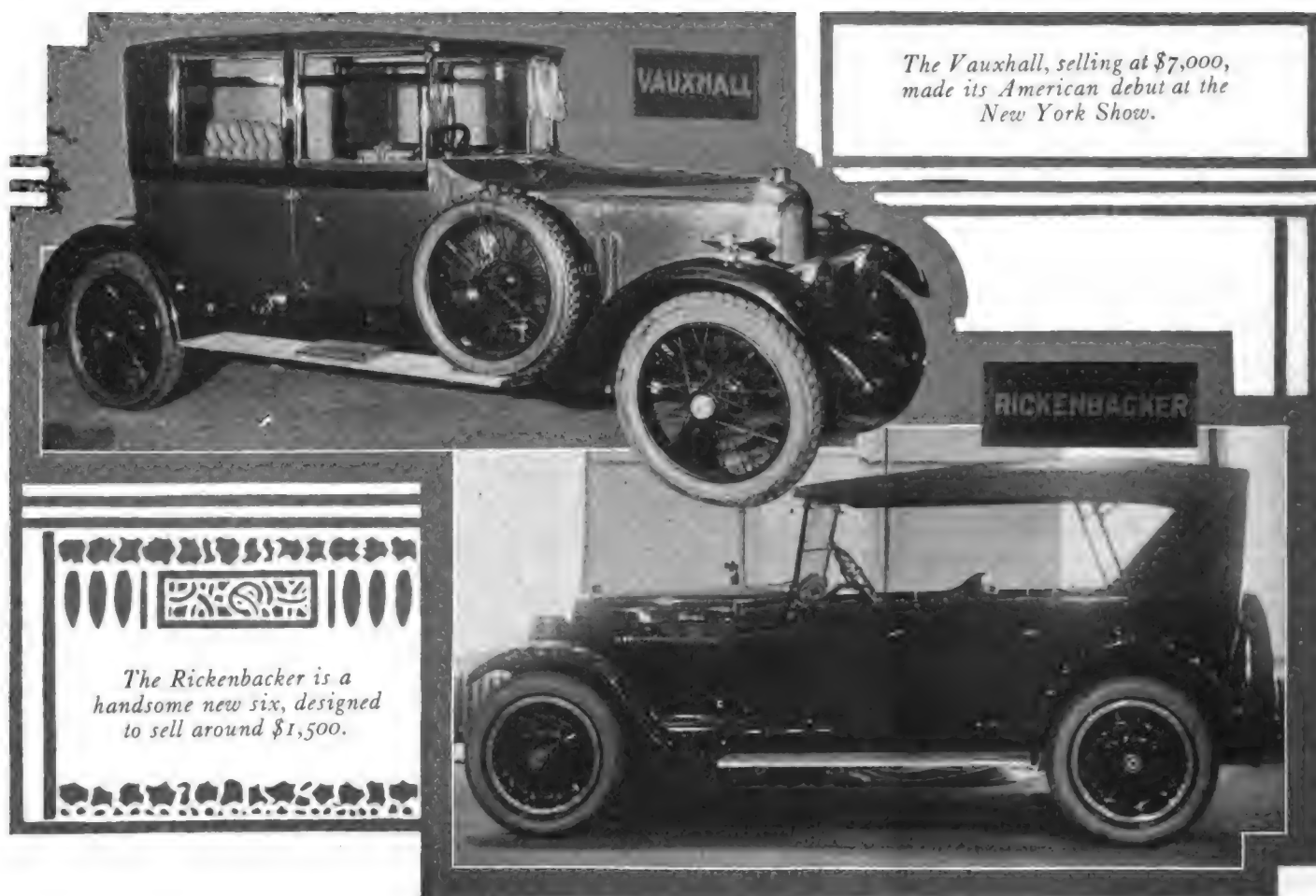
I was at hand when the primal herd
Toiled o'er the heavy sledge,
As they dragged their load
To their cave abode
By the rippling river's edge.

Mine was the thought in that early day,
Stirred for the human weal,
That inspired the sage
In that darkened age
With that vision of Life—the Wheel.

Then came the horse as the slave of man,
Carriage and coach and four,
And the years flashed by
And the time was nigh,
To reveal what the future bore.

Then came the quickening urge of Trade,
Commerce must travel far,
And my wings I gave
To this earth-born slave
With the joys of the motor car.

I am the Spirit of Things that Are,
Born of an urgent need,
Of the Force that lies
In a Man's surmise
In a day ere the Age of Speed.



THE NATIONAL SHOW IN REVIEW

New York's Motor Exposition Marks Milestone in Engineering Progress

By HAROLD F. BLANCHARD

THE national automobile show in Grand Central Palace, New York, set a new mark. With ninety-two makes on exhibition and a record breaking number of cars on display it takes the prize for quantity, but the show also excelled in excellence of the machines displayed, particularly in view of the new low prices. The show will also be remembered as an important milestone in the engineering development of the industry.

Few radical changes in design are noted among the older makers; they have confined their efforts largely to improving details which increase comfort, economy, power, speed, durability and appearance, and in many cases the chassis has been unaltered but new body models are shown.

But among some of the newcomers mechanical innovations are noted in engine and chassis which prove that the 1922 car, excellent as it is, is nevertheless still in process of development.

Buick showed a handsome new

roadster, known as the 6-54. It is similar to the model 54 brought out in 1916 but not manufactured since that time. The features include black fenders with red wire wheels, khaki top, windshield cleaner, spot light, deck rails and specially designed lamps.

The center of interest in the Dodge exhibit was a cutaway chassis mounted on a pedestal about 6 inches high. The new coupe and sedan models with disc wheels were shown.

Studebaker announced the adoption of a disc clutch for the special and big six models; roller bearing steering knuckles also will be used. Otherwise the line is unchanged.

Few Important Changes

Most of the old established manufacturers found it necessary to make few important changes in their models during the year. Such well-known names as Pierce-Arrow, Packard, Peerless, Locomobile, Willys Knight, Overland and many others showed no notable changes. Many other well-

known makes have modified existing models. In this class is the Hudson which looks much like previous designs, although the fenders are more attractive. Nevertheless, numerous mechanical improvements are found on this car. An arrangement for heating the incoming mixture from the exhaust has been added to improve carburetion, increase economy and reduce crank-case dilution. The driver's compartment has been altered to make it more comfortable for the operator. A new type oiler is fitted to various chassis parts and cord tires are standard equipment.

The Essex seems unchanged in appearance except that the standard color is now dark blue instead of green. The five-passenger coach selling for \$1,395, or only \$300 more than the touring car, created considerable attention. The Essex engine has been improved in a great many small details. The combustion chamber has been redesigned to give more power and to prevent oil from being thrown

on the spark plug. The intake gas is now heated, and various other small changes have been made throughout the chassis to further enhance its value.

The Cadillac models are lower, much smarter and even more comfortable. Slight changes have been made to further increase the engine power, and to make the car easier riding and more comfortable to operate.

The Rickenbacker

Among the new cars, unquestionably one of the most interesting is the Rickenbacker. Designed by Captain Eddie Rickenbacker, America's premier ace and former racing driver, the new machine appears worthy of Rickenbacker's past record. It is a six with an L-head motor designed to sell for less than \$1,500. The wheelbase is 117 inches, the tires 32 by 4 inch cord and the weight is 2,600 pounds. The car is lower and more attractive than the usual light six, but the performance rather than the appearance is what commands attention. It will run from 1 mile to 68 miles on high gear, which is remarkable considering that the engine is only $3\frac{1}{8}$ by $4\frac{3}{4}$ inches, yet this engine develops 58 horsepower at 2,800 revolutions per minute. The high engine power coupled with the small car weight promise that the car will be extremely lively in traffic and on the hills. The engine runs with remarkable smoothness at all speeds, which fact is explained by flywheels front and rear. Both are of steel and the front flywheel is located close to the radiator, ahead of the motor support. An inverted cone clutch, Raybestos faced and running in oil, is used in connection with a three-speed transmission, all in unit with the engine. Disc wheels are standard.

Another car which should put up an amazingly good performance on the hills is the new Durant six equipped with the Ansted engine, which develops more than 70 horsepower at 3,000 revolutions. This is excellent for an engine with $3\frac{1}{4}$ -inch bore and $4\frac{1}{2}$ -inch stroke. The high power is due to specially designed "rocking chair" rocker arms which give a noiseless lift of $7/16$ inch. The car weighs 3,350 pounds, the wheelbase is $123\frac{1}{2}$ inches, turning circle 42 feet 8 inches, and tires 32 by $4\frac{1}{2}$ inch cord. The clutch is a dry plate and the transmission, which is located amidships for accessibility, has three speeds forward. Equipment includes the usual fittings and in addition a clock, windshield cleaner, Alemite lubricating system and full set of tools conveniently carried in the left front door pocket. The Durant six resembles the Sheridan, its predecessor,

only in the shape of the hood. Prices: Touring car, \$1,650; roadster, \$1,600; coupe, \$2,250; sedan, \$2,400.

The four-cylinder Durant, which has been on the market for some months, appears at the show for the first time. It is a good looking car, roomy, and sells for the price \$890.

Improved Body Lines

The body lines on the Chandler and the Cleveland models are more attractive, and part of this improvement is explained by the use of individual steps and underslung half elliptic springs in the rear which permit the cars to set lower. The construction of the bracket for the forward end of the rear spring is interesting. The bracket itself is a triangular piece fastened to the under side of the frame, and this member is braced laterally by a curved piece which is anchored to a frame cross member and also fastened to the bracket below the spring bolt.

In looking at the Chalmers the first thing that catches the eye is the addition of a $\frac{1}{4}$ -inch nickel bead to finish off the radiator shell. Fenders of heavier stock and with a deeper crown are used and drum type head lamps have been adopted. Disc wheels are standard equipment, and these in connection with a lower top and a new one-piece windshield give the touring car a very smart appearance. Except for details, the chassis is unaltered. Prices: Roadster, \$1,245; five-passenger touring, \$1,295; sedan, \$2,295; seven-passenger touring, \$1,395.

The Standard eight is noticeably better looking, an achievement attained by extreme attention to detail. The body lines have been refined and the radiator shape has been altered slightly. The radiator shell comes to a point top and bottom at the center, and in the space thus formed at the top is a large name plate in heavy bas-relief. The radiator cap is now a diamond shaped cover of aluminum which is hinged at the rear. The name plate, radiator cap, and the lamps are executed in the same style.

Only one noteworthy change has been made in the chassis. The oil reservoir, instead of being in the crank case, is placed in a pot which is concealed in the running board apron just to the rear of the right front fender. The top of the pot is flush with the top edge of the apron and matches its appearance. It is not necessary to lift the hood to add oil to the engine. Oil is pumped from this reservoir to all the engine bearings, and thus drops to the bottom of the crank case, where a second oil pump draws it off and returns it to the reservoir.

Hanson Six Attractive

The new Hanson six is an extremely attractive car at the price, \$995. It is a chic model with neat straight lines and disc wheels. The finish is good and the upholstery is real leather. It is assembled from standard parts, including a Hanson Special Continental engine with overhead valves. It has a bore and stroke of $3\frac{1}{8}$ by $4\frac{1}{2}$ inches and develops 42 horsepower. Borg & Beck clutch, Detroit transmission, Atwater Kent ignition, Gemmer steering gear, Timken axles, 112-inch wheelbase complete the important specifications.

The Premier six continues the well-known all aluminum engine. The only important mechanical change consists of a large corrugated or finned chamber located in the intake manifold. The exterior of this chamber is also finned and exhaust gases flow around it. Thus the interior is kept quite hot and readily vaporizes any liquid fuel. The electric gear shift is now offered as an extra at \$200, the hand shift being standard.

A new type of aluminum piston, made under the Nelson patents, is used. It is a constant clearance design. When cool it is slightly oval, the long diameter being at right angles to the wrist pin. When warm, it expands round. It is manufactured 10 to 12 thousandths of an inch under size. Then a small bar is placed above the wrist pin at right angles to it. The bar is threaded and provided with a nut at one end. By screwing up on this nut the piston is made oval, being about 2 thousandths of an inch smaller than the cylinder the long way and 22 thousandths smaller the short way. The adjusting bar always remains in place.

The new Liberty six special touring model is a more pleasing looking car with slightly rounded hood lines, smooth body lines, nicked radiator and windshield, disc wheels and individual steps in place of running boards. The equipment includes a water indicator, wing radiator cap, clock, rear view mirror and trouble lamp.

Three cars with special types of engine valves are on exhibition, the Goodspeed, Rotary, and Itala. The Goodspeed takes its name from Leyland Goodspeed, its designer. It is a high-grade four-cylinder car of attractive appearance listing at \$5,400. It is equipped with piston valves for both intake and exhaust. Both valves are driven from a half time crank shaft, which is geared to the main crank shaft. It is said that the engine, which is $3\frac{5}{8}$ inches by $5\frac{1}{4}$ inches, develops 74 horsepower at 3,100 revolutions. It is made by the Commonwealth Motors Company, Joliet, Illinois.

Two Debutantes and a Veteran

*The Hanson and Goodspeed made their debut at the New York Show.
The Itala has been in successful use for many years.*



The Rotary Six

The Rotary is a large six-cylinder car selling for \$6,000 made by the Bournonville Rotary Valve Motor Co., Hoboken, New Jersey. A single rotary valve located on top of the cylinders supplies both intake and exhaust. The valve is about 4 inches in diameter, while the engine dimensions are $3\frac{1}{2}$ by $5\frac{1}{4}$ inches. The intake gas enters an annular ring in the center of the valve and from thence flows through a trough full length in the walls of the valve bore. Intake gas is allowed to pass from this trough to any particular cylinder by a recess in the valve which when in the proper position forms a connection between the trough and an opening in the top of the cylinder. The exhaust opening, likewise, is formed by the same recess connecting the opening in the top of the cylinder with the exhaust pipe. The reasons why this valve is superior to previous rotary valves are not fully apparent, although the motor has been under development for ten years and the first model has been run successfully for more than 60,000 miles. The valve is lubricated by oil leads placed at strategic points. The present model made a run to the coast and return with the engine sealed by the A. A. A. No appreciable wear was found when the engine was disassembled after the run.

The Itala had three cars on exhibition, a handsome six-cylinder chassis with the piston valve engine which has been in successful use for so many years. The new model 50 with a four-cylinder poppet valve engine $3\frac{1}{4}$ by $5\frac{1}{8}$ inches was shown as an attractive sport touring car.

The Kelsey was one of the most interesting cars at the show because it is the first car made in years in this country with a friction drive. The unique feature about the drive, however, is that it is housed in the rear axle. As far as the friction wheel and disc are concerned they are much the same as in former friction drive cars but smaller. The friction wheel drives the rear wheels through spur pinions meshing with large gears on the rear wheels. The whole construction is extremely simple, neat, compact and light. The engine is a six and that is all that there is to the chassis, since the friction drive mechanism takes the place of clutch, transmission and bevel gear.

Smaller Case Model

A somewhat smaller six-cylinder Case is announced as a running mate to the larger car. The new car is a good looking, sturdy design, with a wheelbase of 122 inches. The engine is a Continental $3\frac{1}{4}$ by $4\frac{1}{2}$ in unit with a disc clutch and a three-speed transmission. Tires are Goodyear cord, 32 by $4\frac{1}{2}$ inches.

The Vauxhall made its American debut at this show and has been extremely well received. The model D chassis is shown with a handsome four-passenger touring car body in green with black fenders and black wire wheels. It has a $3\frac{3}{4}$ by $5\frac{1}{2}$ four-cylinder L-head engine and a wheelbase of 130 inches. Price, \$7,000. On the same type chassis is displayed a most attractive four-passenger cabriolet. The model E sport roadster appeals particularly to younger motorists, having a polished aluminum body of rather extreme design. It seats four, the front seats being of the bucket type. The sport model has a $3\frac{7}{8}$ by $5\frac{7}{8}$ inch engine, 114-inch wheelbase and sells for \$7,500. The cabriolet lists at \$8,800 in New York.

Disc wheels are certainly on the increase, and it is also becoming customary to more completely equip the car with such things as a windshield cleaner, trouble lamps, spot lights, headlight lenses to prevent glare, clocks, radiator thermometers, etc. The only car at the show equipped with four-wheel brakes was the six-cylinder Itala.

New Cars at Hotel Exhibits

Several noteworthy new cars were not seen at the show, but at the Hotels Commodore and Astor. The exhibits at the Commodore included: The Gearless steamer; the Gray, a \$500 car in the Ford class; the Fox air-cooled six; Louis Chevrolet's new four, the Frontenac; the Ace rotary valve; the Bay State six, the Driggs four, and the Ogren six. At the Astor were the Ferris, a handsome six, and the Sun, a new air-cooled four selling for \$475.

Only the engine of the Frontenac was finished in time and on exhibition. Full details regarding the car, however, have been given out. It is a medium sized car, built on Louis Chevrolet's racing experience and will sell for about \$2,000. It is the first machine in this price class to have an overhead cam shaft and four-wheel brakes. The engine is an extremely neat design $3\frac{3}{8}$ by $5\frac{1}{2}$. The cam shaft is driven

by silent chains. The cam shaft and crank case are not connected direct by chain but there are two short chains instead, operating over a relay idler. This reduces the sprocket diameter and permits the fan to be driven directly from the idler. The location of the distributor is unique and unusually accessible, being mounted horizontally at the side of the engine cylinder casting, being driven by the cam shaft. The engine develops 60 horsepower and should insure a very lively car. It is manufactured by the Frontenac Motors Company, Indianapolis, Indiana.

The new Gray is a neat looking car selling for \$500 and constructed simply and conservatively. The Gray Motor Corporation, Detroit, is headed by Frank L. Klingensmith, formerly treasurer of the Ford Motor Company, and several other notables in the industry occupy important positions, and therefore this new addition to the ranks of popular priced cars must be accorded more than ordinary attention. The wheelbase is 100 inches, tires are 30 by $3\frac{1}{2}$ non-skid with demountable rims, and the weight is 1,600 pounds. The engine is a four-cylinder L-head design $3\frac{5}{8}$ bore by 4-inch stroke and is coupled to a single plate clutch and a three-speed transmission in unit. Separate units are used for starting and lighting, and the distributor and coil are mounted on the generator. Quarter elliptic springs are used in the front and dual quarter elliptics in the rear. The service brakes are internal expanding on the rear wheels and the emergency brake is a contracting band located to the rear of the transmission. Cooling is by thermo-syphon and gasoline feed is by gravity, the gasoline tank being located in the cowl.

Attractive Air-Cooled Car

The Fox is a six-cylinder air-cooled machine with unusually attractive lines and is distinctly a luxury job. The chassis is hung low, the wheelbase is 132 inches and the lines of body and hood are so well proportioned and so refined that the result is an extremely sleek looking automobile. The engine develops more than 50 horsepower at 2,200 revolutions per minute, unusual power for an air-cooled motor. The cylinders are cast separately, have overhead valves, vertical cooling fins which are air jacketed, air being supplied by a Sirroco type centrifugal blower located at the front of the engine and driven directly by the crank

(Continued on page 50)





New Home of the C. S. A. A. at Modesto.

AUTOMOBILE CLUB NEWS

Nation-Wide Touring Bureau Map Service

Members of the C. S. A. A. are now being served by eleven district branch offices and seven touring bureaus. These offices provide points of contact for the touring member and bring to all sections of Northern California the up-to-the-minute touring service of the organization. The district offices are located at Fresno, Oakland, Sacramento, San Jose, Modesto, Stockton, Chico, Redding, Vallejo, Salinas and Santa Rosa. The touring bureaus are maintained at Eureka, Napa, Santa Cruz, Hanford, Merced, Yosemite Valley and Coalinga. The direct service of the C. S. A. A. is now statewide, members of that organization being accorded the same service by the Automobile Club of Southern California as it renders to its own members. The same is true of the southern motorist visiting Northern California. Through its affiliation with the American Automobile Association the C. S. A. A. member may be assured of similar services throughout the entire United States.

Association Erects Building in Modesto

Embodying all the distinctive features of the mission style of architecture, the new joint building of the California State Auto Association and the Modesto Chamber of Commerce, which is now nearing completion on the Southern Pacific Railway reservation at Modesto, will mark a new advance in civic improvement in this thriving little San Joaquin Valley metropolis.

The new structure will provide ample office facilities for both organizations. Spacious main office rooms, measuring 29 by 24 feet, are provided for both organizations. In addition, a lobby 20 by 23 feet will separate headquarters of both associations, allowing visitors and tourists convenient rest rooms. The new building will face Ninth Street, the main State highway through the city, with a half circle driveway leading to the entrance from two streets.

The south side of the structure will be occupied by the Auto Association, the north by the Chamber of Commerce headquarters. Other conveniences include a rest room for women. Shrubbery will adorn the front lawn. Under the arrangement, each organization will operate separate and apart from each other, both using the central lobby to receive visitors.

The new building is of frame construction, with a stucco finish. It will occupy a space 75 by 100 feet, leased from the Southern Pacific Railway Company. The two organizations share half the expense and maintenance of the building. The railway company lease runs 20 years with an annual rental of \$150.

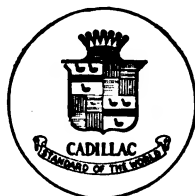
Material for the new building is being furnished, for the most part, by local business firms at cost price, allowing construction of a building which would, under ordinary conditions, cost \$12,000, for the sum of \$8,000.

Hotel and Garage Service Is Extended

In the interest of greater service to members the California State Automobile Association is classifying hotels, garages, electric service stations and restaurants. Classifications are shown on splendid new signs, much larger than the former official signs and yellow instead of blue. Classifications are plainly designated by one, two and three stars.

Hotels which will be able to display the three stars will number less than a dozen in Northern California. These hotels are luxuriously appointed and the last word in hotel development and service. The two stars represent excellent hotels with the finest reputations for service and location. The one star will designate good clean hotels, situated in the smaller city or country that have good reputations and known by the Association as thoroughly reliable.

In San Francisco the line will be so very tightly drawn that only those hotels which maintain a very high standard will be able to display the two star emblem.



REGARDLESS
OF THE AMOUNT
OF MONEY EXPENDED
IT IS IMPOSSIBLE TO BUY A
BETTER CAR THAN THE
CADILLAC

THE PERSON PLANNING TO PURCHASE A MEDIUM PRICED CAR WILL FIND IT REAL ECONOMY TO ADD A FEW HUNDRED DOLLARS AND BUY A CADILLAC. THE UPKEEP ON A CADILLAC IS LESS, THE RE-SALE VALUE HIGHER, AND THE SATISFACTION, PLEASURE AND PRIDE OF OWNERSHIP IMMEASURABLY GREATER.

*Cars now being delivered at the new
reduced prices.*

California **DON LEE** Distributor

Van Ness Avenue at O'Farrell St.
SAN FRANCISCO



[In writing to advertisers please mention MOTOR LAND]

The garage designation will be confined to one and two stars. Two stars are exceptional garages in appointment, service and reliability, and with very few exceptions, this classification is limited to the larger cities where the two star classifications will be the only classification used. The one star will be for the smaller cities and towns where the garages are well equipped, giving good service and thoroughly responsible.

Resorts and country places will be designated by an official sign without a star classification. This classification will be very difficult for resorts to secure unless they can without any exception measure up to the strict requirements as set forth by the Association.

Classification of good restaurants and electric service stations mark another step forward by the Association to increase the value of this service to members. The strict requirements for these officials are such that motorists need not at any time hesitate in following the sign.

The slogan adopted by the club in this department is "Quality rather than Quantity." The universal and easily understood marking, such as stars, will be a considerable aid to motorists and will assure them at all times of the exceptional service and responsibility of those displaying the sign of the Association.

Victory Highway Is Named "Primary" Road

Early improvement of the Victory Highway, stretching from San Francisco to New York City, is now a certainty. This transcontinental highway, which the California State Automobile Association has fostered and signed as far east as Kansas City, has been designated a "primary road" by the States of Utah and Nevada. This designation will entitle the highway to 60 per cent of the Federal money available from the National Government in those States.

Nevada now has approximately \$3,400,000 of available Federal money. This will provide \$2,040,000 for the Victory Highway, which amount, with State aid, will be sufficient to construct an improved road following what is known as the "Northern Route" across that State with the exception of three short sections. A movement is now on foot to raise \$150,000 to assist in improving these units. Ample funds to improve the Utah section of the Victory Highway will also be available, and a meeting has been called to map out a construction program. This meeting, which has been promoted by the Association in co-operation with the Overland Trail Club and other organizations, will be held in Reno February 10 and 11.

The Association will be represented at the Reno conference by H. J. Brunnier, chairman of the good roads committee; D. E. Watkins, Secretary-General Manager; C. C. Cottrell, manager good roads bureau; and D. V. Nicholson, assistant secretary.

Improvement of the Victory Highway will assure Northern California of its share of motor tourist traffic. For years past there has been no improved or signed transcontinental route leading into that section of the State which could be traveled in comfort. A record kept in 1920 by the Utah State Automobile Association showed that of 31,000 motorists reaching Salt Lake City, 25,000 went to Southern California in spite of the fact that the majority expressed a preference for the northern part of the State. The other 6,000 motorists scattered into the Northwest, comparatively few reaching Northern California.

C. S. A. A. Re-Elects Officers for 1922

By unanimous vote the Board of Directors of the California State Automobile Association has re-elected officers for 1922. Those who will guide the destinies of the Association again this year are: George S. Forderer, President;

W. S. Clayton, First Vice-President; W. T. Sesnon, Second Vice-President; Burton A. Towne, Third Vice-President; Edwin F. Merry, Treasurer; and D. E. Watkins, Secretary and General Manager.

Movement to Improve Mt. Lassen National Park

Northern California is to press development by the Government of Mt. Lassen Volcanic National Park. The movement to improve this motoring paradise was launched at a conference held recently in Sacramento and attended by Government, State and County officials and representatives of various civic organizations. The California State Automobile Association was represented by Secretary and General Manager D. E. Watkins.

M. E. Dittmar, a member of the board of directors of the Redding Chamber of Commerce, gave an interesting description of the scenic features of the Mt. Lassen region, illustrated with fine photographs.

Sentiment evinced at the meeting favored a strong endorsement of the bill now pending in Congress which provides that the present limitation that not more than \$5,000 be spent annually in improving the park shall be eliminated. It was generally agreed that if the park is to be developed as a real scenic resource of California, that feature of the present law must be amended.

Idaho State Association Names Officers and Directors

Plans for an active year in the interest of Idaho motorists were formulated and directors and officers elected for 1922 at the annual meeting of the Idaho State Automobile Association. Directors were named as follows:

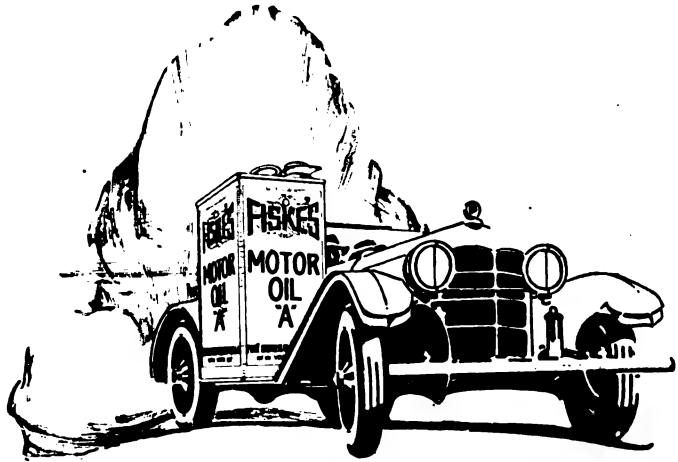
W. H. Gibson, Mountain Home; Robert A. Davis, Jr., Nampa; J. E. McDermond, Pocatello; R. B. Greenwood, American Falls; C. F. Mann, Boise; A. J. Grosscup, Nampa; Bernard Eastman, Payette; P. C. Meredith, Buhl; V. T. Craig, Emmett; H. W. L. Niemeyer, Nampa; H. G. Fuller, Ashton; R. W. Sheppard, Idaho Falls; Eugene B. Sherman, Boise; Eustace Smallwood, Nampa; and Jay Galligan, Caldwell.

The new board organized and the following officers were elected:

Robert A. Davis, Jr., President; C. F. Mann, Vice-President; J. E. McDermond, Second Vice-President; P. C. Meredith, Third Vice-President; and H. W. L. Niemeyer, Secretary-Treasurer.

Proposed activities for 1922 centered primarily upon an active road signing campaign; greater distribution of strip and State maps; active promotion of the Idaho entrance to Yellowstone Park and active promotion of the Boise Valley-Winnemucca Highway, a short cut to California. Considerable discussion was also given the subject of issuing and distributing through the various police departments of the State the rules of the road. With the opening up of spring a vigorous campaign for new members will be waged. Committees on legislation, good roads, touring and law enforcement will be named later.

The good roads subject received considerable attention, particularly in view of the fact that Idaho has many miles of State highway to build and maintain and that the Highway Department receives and spends more of the tax payers' money than any other government department of the State. It is also evident that this money is not being expended to the best interests of the tax payers, that much improvement can be made and that the automobile owners of Idaho are most directly and vitally interested in this subject. The report of the Secretary of State showed that for 1921 there were over 52,000 cars licensed in the State, upon which the State collected over \$883,000 in license fees. This money is all devoted to good roads purposes.



There is a lot of pleasure and satisfaction in driving when you know that your car is purring along without a knock or squeak or a rattle and when at the end of the drive it is ready to do the same thing over and over again. That's the feeling car owners have who use Fiske's Lubricants. There is no grumbling or groaning with them, for their cars are getting perfect lubrication. Why not have your car do likewise? Start in today using Fiske's Lubricants—it's a start you will never regret.

FISKE'S MOTOR OILS

will lubricate the cylinder walls while burning freely and possesses a low carbon content because they are scientifically refined from premium Pennsylvania crude. For use in every kind of internal combustion engine.

FISKE'S GEAR LUBRICANT

Use it in your gear cases and you'll find that it will not leak from the cases nor be cut up and worked off the gears to the sides and corners of the case. It stays on the gears—always.

FISKE'S CUP GREASE

Is a pure, smooth, high quality lubricant that can be used in all grease cups and working parts of your car. Will keep its consistency at all times—either winter or summer.

FISKE'S CLEANSER

Contains nothing harmful to highly finished surfaces and will remove easily all grease and dirt from the surface. Once used—always used.

FISKE'S LUBRICANTS GUARANTEE YOU PERFECT DRIVING



"Standard in Quality for Over Fifty Years"

FISKE BROTHERS REFINING COMPANY

General Offices: 24 STATE STREET, NEW YORK, N. Y.

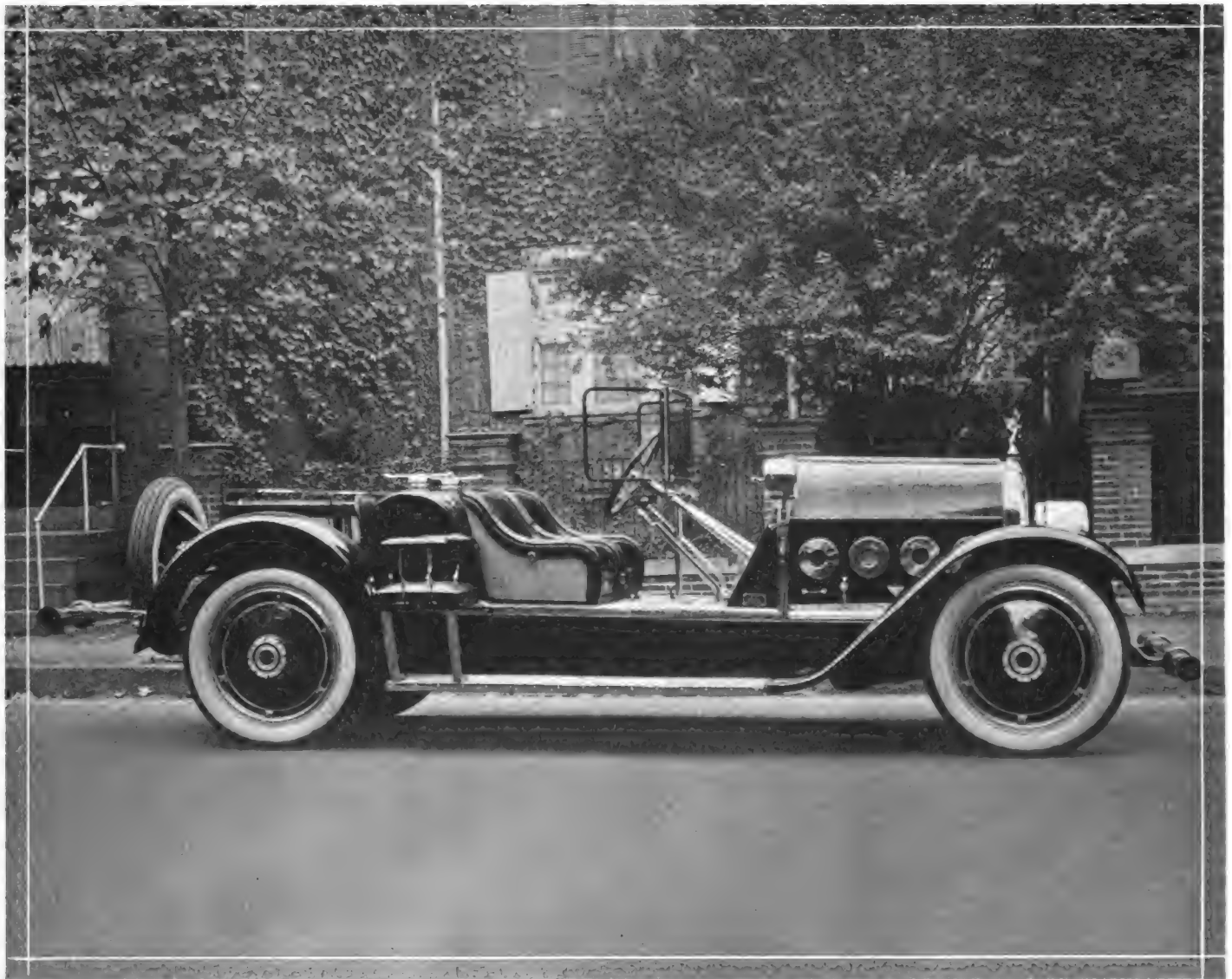
PACIFIC COAST DISTRIBUTORS

WATERHOUSE & LESTER COMPANY

345 N. Los Angeles St.
LOS ANGELES

540 HOWARD STREET
SAN FRANCISCO

Fifth Street at Davis
PORTLAND



An extreme custom built model with cane-work seats and trunk panels.

THE CUSTOM BUILT BODY

An Artist Works Out Each Little Feature with Infinite Care

BUILDING a motor car body is a good deal like building a ship. The ship has a skeleton to which the planking or the steel plates are attached on the outside, and the inside is finished to cover the ribs.

The construction of an automobile body is similar. The skeleton is a strongly made framework of ash, put together piece by piece. The outside of the framework is cleverly concealed by panels of aluminum or steel. And the inside is finished in leather or cloth.

As far as the details go, the creation of a very fine custom body more nearly resembles the production of a fine house where the architect is an artist who works out each little feature with infinite care; where such small things as door knobs are especially designed

by him to harmonize with the period and general character of the interior; where woodwork, lamps, mantles and all internal features are specially wrought according to detailed designs by the architect; and where the external characteristics of the building are handled with the same care and attention to detail.

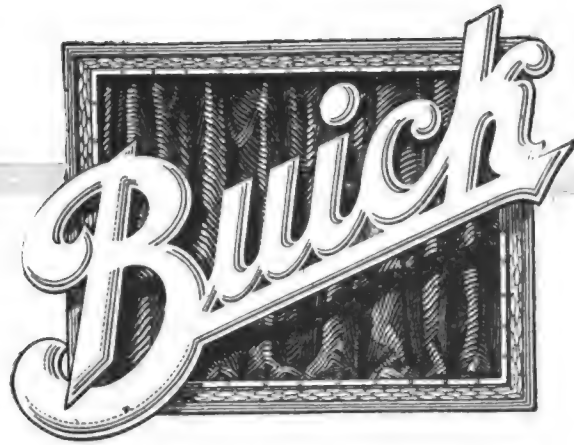
Cost Is High

Such is the modern custom built body. That is why the best examples of the art cost so much money. The whole body is designed by a body architect, a high priced artist who creates a body to fit the personality and meet the particular needs of a particular person. Following out this idea, it might be expected that the body which he would design for a

young and beautiful society belle would be dainty and graceful of line, delicately and exquisitely finished, with every luxuriously feminine appointment a masterpiece. Whereas, the body which he would design for the wealthy young man about town would be simpler and more severe in line and spirit; it would be more reminiscent of the comfortable leather upholstered furniture and heavy dark oak trim found in the favorite room of his club.

The car for the young lady of fashion would be finished in delicate tones; perhaps a special color would be evolved just for this particular machine, and the soft, luxurious fabric used in the interior would be especially woven and dyed to match.

The hardware, including door handles, window raisers and locks, vanity



Inspect the new 1922 Buick Models at the San Francisco Automobile Show and convince yourself that Buick leadership is due to the reputation gained by over twenty years of consistent Buick performance.

**Reduced New Prices
on all Buick Models**

4-CYLINDER

Roadster.....	\$1055
Touring.....	\$1095
Coupe.....	\$1495
Sedan.....	\$1595

6-CYLINDER

Roadster.....	\$1590
Touring.....	\$1620
Touring, 7-passenger...	\$1820
Coupe.....	\$2135
Coupe, 4-passenger....	\$2350
Sedan.....	\$2415
Sedan, 7-passenger.....	\$2650

DELIVERED HERE—WAR TAX EXTRA

It's not what you pay—it's what you get for what you pay.

Compare Buick prices and values with all others.

Note the accessibility of all Buick parts in the operating chassis at the show.

WHEN BETTER AUTOMOBILES ARE BUILT
BUICK WILL BUILD THEM

HOWARD AUTOMOBILE CO.

The Largest Distributor of Automobiles in the World
Van Ness Avenue at California Street, San Francisco

PROSPECT 4000

OAKLAND

PORTLAND

cases, vase holders, smoking paraphernalia, may be specially designed and produced by the best artisans in the country, regardless of expense. The material may be silver or gold. The handles and other details may be inlaid with mother-of-pearl; the woodwork may be carved or inlaid with beautiful designs. There have been cases, for example, where the hood, instead of being made of polished aluminum, was made of silver; the hood, instead of being produced by the body builder, was wrought by one of the leading jewelers in the country.

The closed body for the wealthy young man is simpler, but invariably just as expensive. The lines of the exterior are straighter, the colors are darker, richer, more somber, and the interior is masculine in tone and texture.

Little Difference in Principle

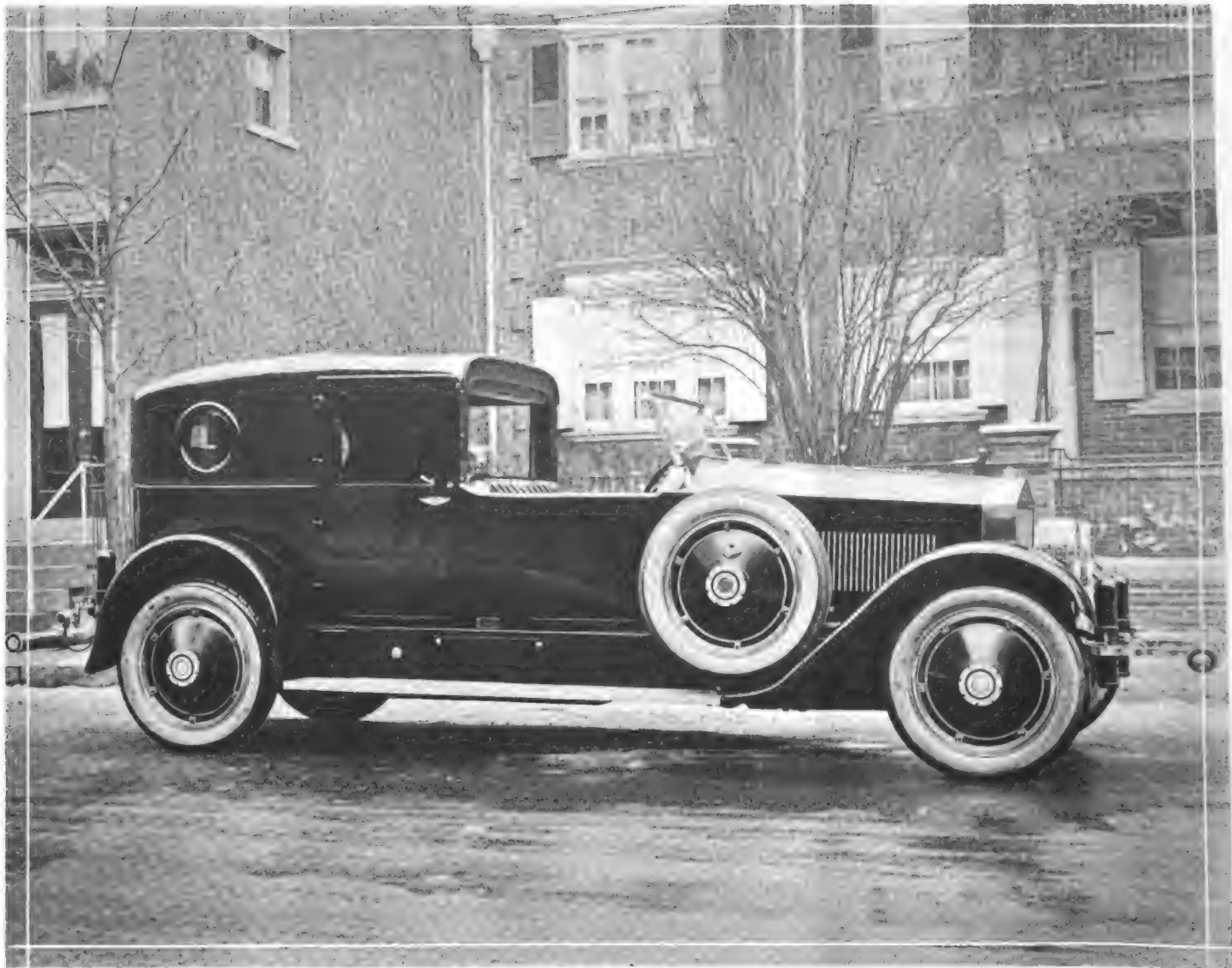
The fine custom built body and the bodies found on our cheapest popular cars differ little in principles of con-

struction. It is in the details that the variations occur. In the first place, the framework of the body is more expensive, stronger and put together more carefully in the better grade jobs. Cars that are popular in price invariably have the framework covered with steel panels instead of aluminum. Steel is heavier and adds somewhat to the weight of the body, but it is much cheaper. Where a body of a single design is made in large quantities, it is feasible to press some of the panels into shape. The dies, however, are expensive, and pressing can only be resorted to when the quantity of bodies is large. The cheaper bodies have lines that are simple. Straight lines and single curves are the rule. Double curves are rarely seen. The simplicity of the lines makes it possible to lay the sheet metal panels on without much difficulty.

Panels for the more expensive bodies are formed by hammering. This work

requires great skill, for it depends largely on the acuteness of the eye of the workman. In some cases the panels are hammered into shape with a mallet, the panel resting on a sand bag. But it is more usual to employ a special form of power hammer with a head about as large as a 3-pound sledge hammer, and an anvil directly under it of the same size. The head of the hammer is slightly concave, and the anvil convex to match. The workman who wishes to curve a panel takes a sheet of metal of suitable size and shape and places it between the hammer and the anvil. Then he steps on a pedal and the hammer hits the anvil rapidly. The exact speed is determined by the amount of pressure on the pedal. The panel is slowly fed back and forth and from side to side. The function of the hammer is merely to give the panel a permanent set. The workman bends the panel by hand to the shape he desires, and

(Continued on page 56)



Special Town Car Body on Packard Chassis lengthened to 150-inch wheelbase.

The GILL BATTERY SHOULD BE IN YOUR CAR

We stand ready to demonstrate that the Gill Battery is absolutely the best battery ever built for automobile starting, lighting and ignition.

We take this stand because in the Gill Battery we have eliminated the cause of 95% of battery troubles — namely, separators.

We invite your inspection of the Gill Battery. We will submit it to any test that you name. The way that the Gill Battery stands up under tests that the old style, separator-type batteries will not, can not go through successfully, will amaze you.

Visit the Gill dealer in your city. He will tell you about the sturdy construction of the Gill Battery and some of the gruelling tests it has been subjected to. He will also give you our illustrated folder.

- the Gill Battery has no separators.
- the Gill Battery has perfect circulation.
- the Gill Battery has quicker recuperation.
- the Gill Battery has a 2 year guarantee.
- the Gill Battery is sold at practically the same price as other standard batteries.

Notice to Dealers

There is a splendid opportunity for the dealer who takes on the Gill Battery. Write us for territory that is still open and our attractive proposition.

Gill Storage Battery Company, Incorporated
San Bernardino, Calif.



Gill
BATTERY

The only battery that has successfully eliminated separators.

MAKING THE MOTOR'S SPARK OF LIFE

Explaining the Modus Operandi of the Ignition System

THE human body is a vast chemical factory divided into numerous departments which carry on a great variety of chemical processes. The materials that it is made of are well known—carbon, hydrogen, oxygen, nitrogen, phosphorus, sulphur, calcium, iron, sodium, chlorine, and other elements whose properties are fully understood. Yet, in spite of all this knowledge, the vital thing that makes a human body a living, sentient being is a mystery.

Similarly, the electric spark is the vital force which makes the automobile possible. But fortunately there is no mystery about the production of the force which gives it life. The regular recurrence of electric sparks at the plug point at just the right time is responsible for its running. And the method of their making, the modus operandi of the ignition system, is not only easy to grasp, but its comprehension makes the motorist almost independent of roadside delays.

Not Complicated

A great many motorists look upon the ignition system as something hard to understand—something that they might be able to learn about by assiduous study, but this idea is wrong. There is really nothing hard about it. Unquestionably the diffidence with which most people approach electrical matters is due to the fact that the electric current cannot be seen. The system is no more complicated than the waterworks system in any town, which consists of a reservoir, pumping station, perhaps a water tower and pipes which run therefrom to every house, office and factory. This is considered easy to understand, because the pipes are hollow and water runs through them. That is really all there is to it. But after all, the flow of an electric current is just as simple, and any difficulty in understanding its action is largely a psychological one. The current flows through a wire instead of through a pipe. Around the wire insulation is placed to prevent leakage of the current to other metal parts. Therefore the wire itself may be

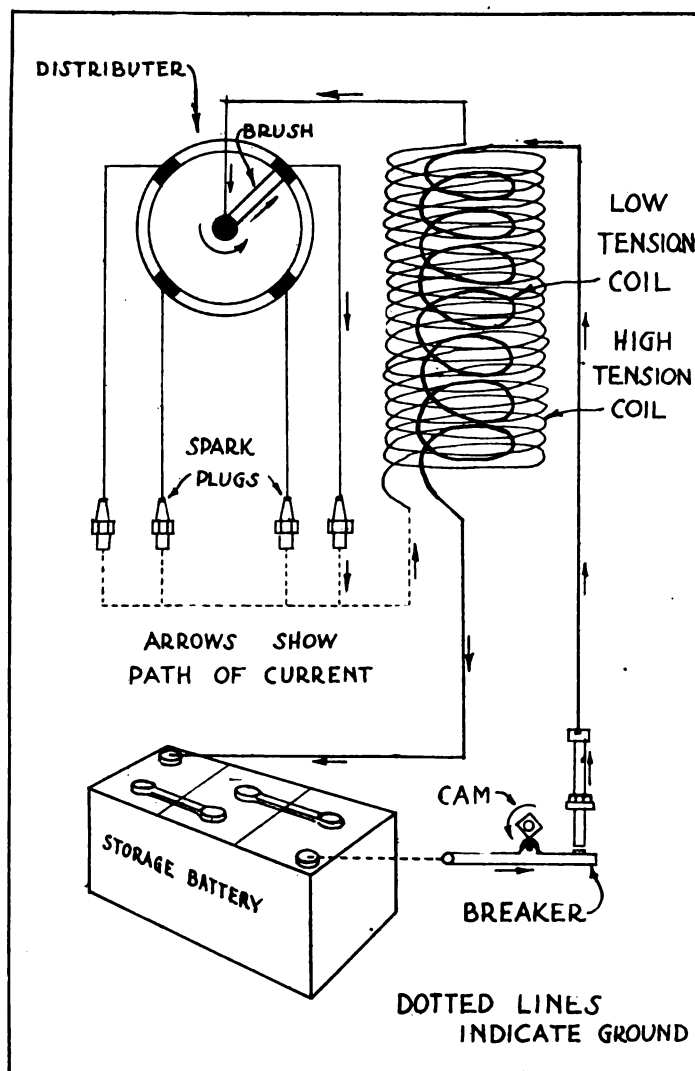
likened to the hole through a pipe, and the insulation takes the place of the walls of the pipe. Pressure is required to make water flow, and similarly pressure is required to make electricity flow. Electrical pressure is called

case. These points are placed about one thirty-second of an inch apart, and electric current must be made to flow between them in order to ignite the mixture in the cylinders. An extremely high electrical pressure is required to force current across this gap. In fact the pressure amounts to several thousand volts.

It is not feasible to build a storage battery or a magneto that will supply this tremendous pressure directly. Whether a battery or a magneto is used, the current available rarely has a pressure of more than 12 volts, and usually the pressure used is 6 to 8 volts. Fortunately it is an easy matter to take a current having a pressure of 6 to 12 volts and transform it into a current having a pressure of several thousand volts. Whether the current source is magneto or battery, the means of raising the voltage is the same. The pressure of the current is multiplied to the desired figure by the use of an induction coil.

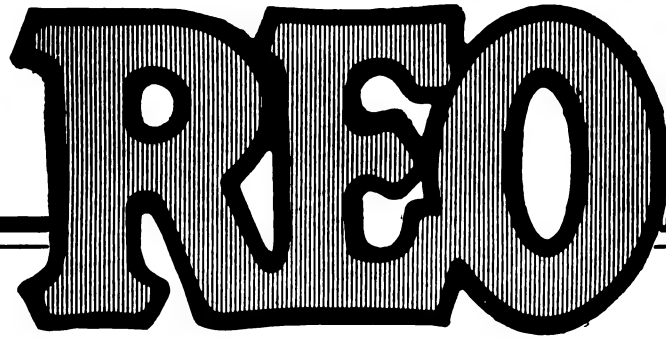
Low Tension

The low voltage current is usually spoken of as low tension and the high voltage current supplied to the spark plugs as high tension. The induction coil is really two coils which have no electrical connection relatively with each other. The low tension coil consists of few turns of wire and is placed inside of the high tension coil, which contains thousands of turns of wire. It is a well-known fact that when an electric current flows through a wire lines of magnetic force surround the wire. In common parlance, the space adjacent to the wire is magnetized. This means that when the current is flowing through the low tension coil, the space surrounding this coil is magnetized. Inasmuch as the high tension coil is placed around the low tension coil, this magnetic force permeates the high tension coil. Let us go back a moment. If a current flows through a wire, it produces magnetism around the wire. Conversely, if a wire is moved through lines of magnetism a current is generated in the wire. This, by the



voltage. To carry the parallel still further, suppose you had a tank of water, and assume that for some special reason it was impossible to lay pipe directly to the tank. Assume that the pipe line must be terminated a hundred feet from the tank. How can the tank be supplied with water from this pipe? Instantly you answer—if the water pressure in the pipe is high enough and the pipe is aimed right, it will throw a stream of water into the tank, although it is 100 feet from the end of the pipe. In other words, the water is made to bridge a gap through the air by increasing the pressure sufficiently to throw the stream this distance.

The spark plug points offer a similar



Reos Work for Everybody!

One California Stage Line operates 56 Reos, each unit averaging 175 miles per day—15 miles to a gallon of gasoline—600 miles to a gallon of oil. They carried over a million passengers in ten months, safely; some of their units have gone over 400,000 miles.

Big businesses—like the Pacific Gas & Electric Company, the Southern California Edison Company, and the Associated Oil Company—use Reos.

Reo is popular wherever cost sheets are kept.

Reo Taxicabs make lower rates possible. Reo Safety-first School Busses are the first choice of educators.

Reo Fire Apparatus fights forest fires for the Government, and saves property for California citizens. Reo Carry-alls for contractors speed up the San Francisco building program.

Reo Double-deckers enlarge the grocer's territory. Ranchers, milk haulers and fruit growers depend on Reos.

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way, is the principle on which electric generators and magnetos operate. Obviously, then, if we could move the high tension coil up and down a little, through the magnetic lines generated by the current flowing through the low tension coil, we should get a current in the high tension coil, and if we move the high tension coil rapidly enough we should get a current of a very high voltage, so high that it would be powerful enough to jump the gap at the spark plugs. But there is a simpler way of producing the same result. It is not necessary to move the high tension coil with respect to the low one in order to generate the current in it. By breaking the circuit in the low tension coil, the current in this coil dies down to zero with the speed of light. And as the current dies down, the magnetic force surrounding the coil also falls to zero. In an untechnical way, it may be stated that this movement of the magnetic influence surrounding the low tension coil from a maximum to zero in a fraction of an instant has exactly the same effect as if the high tension coil were quickly moved. The result is that a current having a tremendous voltage (pressure) is generated in the high tension coil during the moment that the current in the low tension coil is falling to zero. And this fleeting surge of high pressure current in the high tension coil is the one which is switched to the proper cylinder by the distributor and which jumps the gap at the spark plug points and produces the explosion.

Breaker Mechanism

The circuit is broken in the low tension coil by the operation of the breaker points. The breaker mechanism, by the way, is operated by a cam and is usually located directly under the distributor. Operation of the breaker points by the breaker cam is the cause of the production of the spark, and by timing the breaker so that its points operate at just the right instant the sparks occur in the cylinders, not haphazardly, but just exactly when wanted. The exact timing, of course, may be varied slightly by the spark lever.

If this system is used on a one-cylinder engine no distributor is necessary, but if the engine has more than one cylinder, a distributor is required in order to switch the current to the proper cylinder.

It is worth while at this point to explain more definitely the path of the current in both the low and high tension circuits. In the low tension circuit the current is drawn from the battery, and flows through the low tension part of the coil, from whence it runs to the breaker point, which is fixed. The other point of the breaker is grounded on the engine. Also, in most cases, the other battery terminal is grounded so that current flows from the battery through low tension coil through the breaker, and thence flows back through the engine and the car frame up through the grounded battery wire back to the battery. The system is grounded merely to save wire and simplify the design.

High Tension Coil

The high tension current is generated in the high tension coil. One end of this coil is grounded and from the other end current flows to the central wire of the distributor where it is switched through the distributor brush to the cylinder which requires it. The current thus passes through the high tension wire running to this cylinder and runs down the central electrode of the spark plug. From thence it jumps across the gap. The other point of the spark plug is embedded in the spark plug shell and this is screwed into the cylinder casting. Therefore the latter point is grounded and the high tension current makes its way back through the engine to the grounded wire of the high tension coil, and thus the circuit is completed.

Everyone knows that when the electric circuit is broken a spark occurs at the point where the break is made. Therefore it would be expected that whenever the breaker points separate that a spark would be observed. Sparking at these points, however, is prevented by connecting a condenser across the points. One side of the condenser is connected to one point and the other side is grounded, inasmuch as one of the breaker points is grounded. It is sufficient to say in passing that the action of the condenser is such as to prevent sparking at the points and its use is essential in that if the spark did occur every time the points were broken that they would soon become burned away. The construction of the condenser is such that it does not act as a short circuit as might be imagined. It really has no effect on the points except to prevent sparking.

The action of the magneto is similar in principle. In this case, however, the low tension current, instead of being supplied by the battery is generated in the low tension coil because this coil is placed on the rotating armature of the magneto and thus in effect is an electric generator. The high tension coil is wound directly around the low tension coil and the breaker, distributor and condenser are connected exactly as described for the battery system.

The system used on the Ford is slightly different, although involving the same principle. The current is generated in a series of coils close to which rotate a series of magnets connected to the flywheel. This arrangement merely generates the current. This current is then carried to the Ford timer at the front of the engine through a single wire. Inside the timer there is a rotating brush which may be roughly compared to the brush of the distributor in the system first described. Instead of having a single induction coil there are four coils, and the brush on the timer switches the low tension current into each of these coils in turn. One end of each high tension coil is directly connected to a spark plug. Therefore it will be seen that the current generated by the magneto is delivered to the timer where the current is sent in succession to each of the four low tension coils and thus passes through a ground wire back to the magneto, which is also grounded on one side. One end of each high tension coil is grounded, and the other end is connected to a spark plug in each case. It will be seen that there is no breaker mechanism. The timer is not designed to act as a breaker. To make up for this lack each coil has a vibrator point on the top which breaks the low tension circuit magnetically. The timer, however, is designed to switch the low tension current into the proper coil at the proper time, and while its action is not as precise as that of the breaker it works very well. As soon as the timer brush switches the low tension magneto current into a given wire running to one of the induction coils, the magnetic breaker on the top of the coil starts vibrating and breaks the low tension circuit repeatedly, and thus a series of sparks is generated in the high tension coil.



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MOTOR GOSSIP OF THE MONTH

By THE OBSERVER

New Elgin Model

The Elgin has announced a new model. While the engine is the same size it is more powerful, and chassis and engine are new in design. The engine develops 46 horsepower instead of 37 and is a valve-in-head design with a bore of $3\frac{1}{8}$ inches and a stroke of $4\frac{1}{4}$ inches. Engine changes include a new lubricating system in which oil is carried to the bearings through a hollow crank shaft and oil pressure is regulated according to the vacuum in the intake. The cooling system is larger and the frame is $7\frac{1}{2}$ inches deep, an increase of 2 inches. The emergency brake now acts on a drum immediately to the rear of the transmission.

Optional equipment on the new car is the Cutler-Hammer mechanical gear shift which is fitted for \$25 extra. It consists of a dial ring on top of the steering column which can be set in advanced for the gear desired and then depressing the clutch makes the shift. When this equipment is used the emergency brake is eliminated in favor of a pull handle on the instru-

ment board, thus leaving the driver's compartment unencumbered.

The wheelbase is 118 inches, tires are cords 32 by 4 inches and a motor meter and windshield cleaner are standard equipment.

Auto Coaster Brakes

Those familiar with the coaster brake bicycle have often wondered why the same idea has not been applied to the motor car. And recently it has. Two French engineers, M. Touté and M. Lagache, have invented an automatic overrunning clutch which seems to give the desired action. The device has been adopted by Chenard-Walcker in England, and there are others in this country and on the continent who are said to be considering its use. The overrunning clutch is a compact device which may be built into each gear. For example, it may be included in the high and second gear mechanism and omitted from the low and reverse mechanism. Thus high fuel economy is obtained since the car coasts automatically at

every opportunity. At the same time, the omission of the device from low and reverse gives the desired engine braking effect for steep hills. Obviously, the device prevents the use of the engine as a brake on whatever gears it is installed.

Franklin Four

The Franklin four-cylinder model, under development for some time, has just been announced. Its engine is similar to that of the six except air is circulated by pressure instead of by suction, a blower at the front taking the place of a blower at the rear. It is expected that the price will be less than \$1,000. Semi-elliptic springs are used on the new model, but practically all other Franklin features have been retained, including the laminated wood frame. The wheelbase is 102 inches, tires are 30 by $3\frac{1}{2}$ inch cords, and the engine is $3\frac{1}{4}$ by 4 inches, the dimensions of the six. The parts in the engine, clutch and transmission are interchangeable with those in the six.

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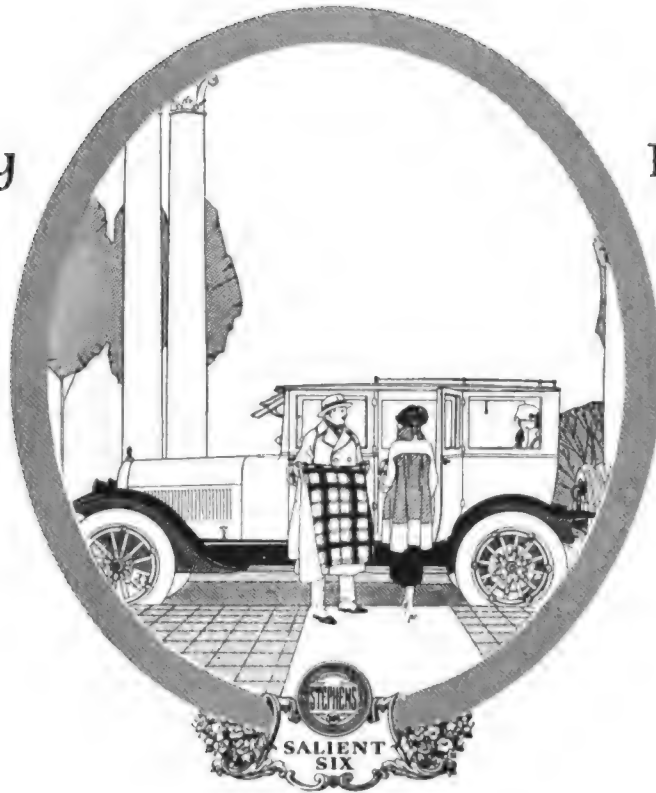
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New Air-Cooled Car

The D. A. C. twin three is a most interesting six-cylinder air-cooled car recently announced by W. J. Doughty, former Franklin dealer, Detroit, Michigan. The car has attractive design and a moderate price, \$1,250. It has a wheelbase of 115 inches, 31 by 4 cord tires and weighs 1,740 pounds. The engine is most unusual. It is a V-type with the cylinders set at a very acute angle. The cylinders have annular fins to assist in cooling and air is blown over them by a large four-bladed fan at the front. The blast from the fan is largely concentrated on the cylinders by a sheet metal duct enclosing each group of three cylinders. Overhead valves are operated by pull arms which are actuated by a cam shaft set between the cylinder banks. With this construction rocker arms are eliminated.

It is said that the engine develops 32 horsepower and yet weighs less than 200 pounds. The bore is $2\frac{7}{8}$ inches and the stroke 4 inches. The engine is in unit with a disc clutch and a three speed transmission. Ignition is Atwater Kent, and starting and lighting by the Dyneto single unit system. The service brake is on the transmission and the emergency brake on the rear drums.

The engine is specially noteworthy

because it has been designed so that numerous parts can be die cast, thus reducing machining.

The cylinders are machined outside as well as in, giving uniform thickness of wall and uniform cooling, the cooling fins being pressed on.

It is expected that the car will be particularly well received abroad because it combines the qualities of lightness and fuel and tire economy with high power.

Cottonoid Automobiles

Henry Ford is planning to produce cottonoid automobiles, stamping them out like doughnuts. According to Roger Babson, who recently visited Henry Ford, the Ford Motor Company is planning to build automobile bodies of cotton mainly. The other components are glue and formaldehyde. This material will be used for stamping out bodies, and although it is not stated, there is no doubt but that after the body is formed from the material, heat will be applied to harden it. Henry Ford believes this idea will work a great revolution in the industry. Ford would not be surprised if people eventually lived in cottonoid houses, rode in cottonoid trains, and worked in cottonoid shops. The advantages claimed for the new material are toughness, durability, lightness and cheapness.

Detroit Specifications

The \$1,000 steam car which is to be produced by the Detroit Steam Motor Corporation will have a wheelbase of 110 inches, a weight of less than 2,000 pounds, and 31 by 4 inch tires. The engine is rated at 10 horsepower, and is a $3\frac{1}{4}$ by $4\frac{1}{4}$ inch double acting, single expansion, geared directly to the rear axle. Stevenson link valve motion is used. The boiler is designed for 500 pounds pressure. The steam pressure, water level, and fire are controlled automatically, and the car will operate on gasoline, kerosene or distillate. It is said that the machine will run 2,000 miles on a gallon of lubricating oil, and 15 miles on a gallon of kerosene, while 800 miles may be covered on a filling of water.

Templar De Luxe Sportette

A novel feature in the Templar De Luxe Sportette is the installation of the Whyte Motor Control, grouping, for the first time in automotive history, all the instruments, controls and switches in the center of the steering wheel, thus allowing the space formerly occupied by the instrument board to be used for compartments.

This is the first step toward real comfort for the driver that has been made in automotive accessories in years.

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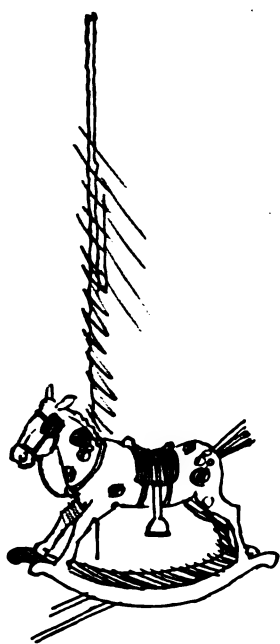
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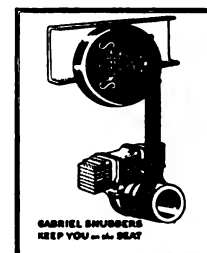
Snubbers stop this by equalizing the movement of the car body. Without lessening the flexibility of springs, they control their action, and eliminate the rebound. Snubbers let you ride *on the level*—give you complete comfort, save gasoline, tires, and make the car last longer. A set consists of four Snubbers—2 front and 2 rear. Quickly installed at any Gabriel Service Station.



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LOCATING ENGINE TROUBLE QUICKLY

If the engine knocks it is most likely that the spark is advanced too far, but knocking may also be caused by too rich or too lean a mixture, loose connecting rod bearings, indicated by a light knock at high speed, loose crank shaft bearings, indicated by a heavy pounding at low speeds and under heavy loads. Worn valve tappets are indicated by a light tapping sound. Carbon in cylinders is remedied of course by having the carbon removed.

If the engine misses, a spark plug may be short circuited, or perhaps the points are not adjusted to .025 of an inch. A wire may be loose, or partially or wholly short circuited. Compression may be bad in one or more cylinders due to a valve which is stuck or in need of grinding. Or perhaps there is a broken valve spring. Occasional missing may be caused by water in the gasoline. If

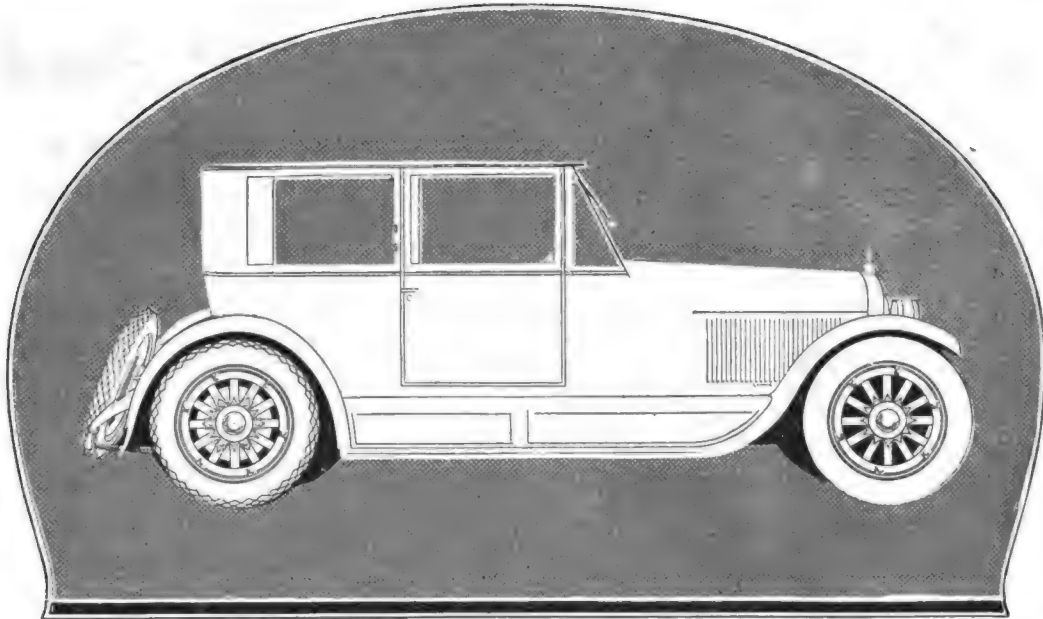
the engine is provided with pet cocks the missing cylinder may be located by opening the cocks one at a time while the engine is running. The cylinder not exhibiting any flame through the pet cock obviously is missing. Missing may also be caused by an air leak between the carburetor and the cylinder block. If liquid gasoline is being drawn in through the intake, it indicates that the check valve on top of the vacuum tank is not seating properly.

If the starter works but the engine fails to go, the trouble may be caused by failure to turn on the ignition switch, lack of gasoline, poor grade of gasoline in cold weather, or water in the gasoline, weak or defective ignition, breaker points out of adjustment, water on coil or terminals, over-rich mixture caused by continued use of the choke.

If the engine lacks power, the trouble may be caused by leaky valves, too rich or too lean a mixture, late ignition, lack of water in the radiator, or lack of oil in the motor, lack of gasoline due to dirt in the jets, or in the jet pipe, poor grade of gasoline in cold weather, dragging brakes, or flat tires.

If the motor stops suddenly, it may be out of gasoline, in which case try the pet cock on the bottom of the vacuum tank. If the vacuum tank is empty and the rear tank full, the trouble may be due to the fact that the vent in the filler cap is clogged with dirt.

If the electric starter will not work it shows that the battery is low, battery connections are loose or short circuited, the switch is in faulty condition, or the motor brushes contact with the commutator in a faulty manner.



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YOUR CAR'S COMPLEXION

How to Keep it New and Improve Surface

Careful washing hardens the varnish and preserves the finish, whereas dirt on the surface, if allowed to remain, has a tendency to cut into the varnish and spot it. The best way to keep a car new is to keep it clean. If the washing is properly done it will improve rather than harm the surface, although if improper methods are employed it is easy enough to ruin the finish.

The car should be cleaned regularly and systematically. The varnish on a new car is always benefited by clear, pure water, and even when the car is not in active use it is a good plan to clean it at stated intervals. In summer, preferably, the water should be as cool as possible. On a new car, washing with cold water serves to harden the varnish and increase its brilliancy. During the winter if the washing is performed in a warm place the use of cold water is all right for an occasional washing, but extremely cold water applied in a cold place is not good for the varnish.

Use Clean Water

It is not a good plan to wash the car in bright sunlight because the

suns dries the water too rapidly and causes streaks in the finish. The water used should be clean and frequently changed. It is not a good plan to turn the hose on the body unless the hose is broken up into a fine spray. The use of a pail and sponge is better than a hose.

Before washing the car the top should be thoroughly cleaned. After brushing it should be sponged with tepid water, and when coated with dust this water should contain enough castile soap to remove it readily. After it is washed clean the surface should be sponged with clean water and then wiped dry with a chamois skin.

Soften the Dirt

In washing the body it is essential to soften the dirt before removing it. If the car has just been brought in from the road, begin by dipping the sponge well into the water, allowing it to soak up as much water as it will hold, then starting at the top, dash the water obliquely against the panels. Another way is to squeeze the water out of the sponge at the top of the panels to loosen the dirt.

If the washing of the car has been postponed long enough to let the dirt harden on the surface, it is advisable to dash plenty of clean fresh water on the panels until all dirt is thoroughly soaked. Then allow the machine to stand for 15 or 20 minutes until all particles have had a chance to soften. As far as possible the mud and dirt should be floated off by a natural flow of water rather than wiped off. The latter practice usually results in the scratching of the finish. Obviously a sponge full of water drawn over a dirty varnished surface has a certain abrasive action which is destructive to the glass-like polish. Careless use of the sponge will reduce the brilliancy as the number of scratches increase, and eventually the undercoats may be exposed.

After the first washing a new sponge and a new pail should be taken in hand and the surface again washed with a fresh supply of clean water. A soft wash brush, oval in form and chisel pointed, should be used to tool around the surface ornaments, mouldings and other fixtures. After the body has been thoroughly cleaned the running

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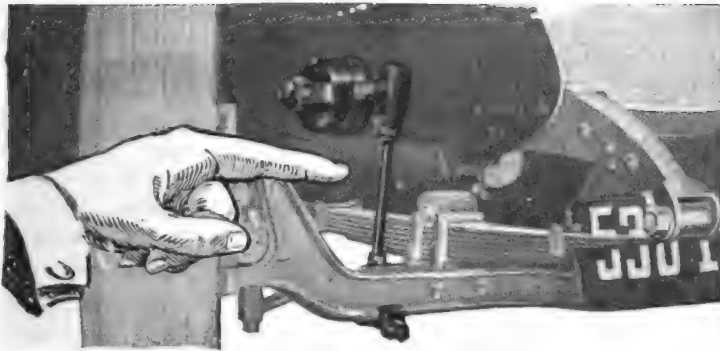
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gear should be handled in the same way, but under no circumstances should the same sponge, chamois or brush be used on body and running gear; a separate set should be had for each, the theory being that the running gear is so much dirtier that the tools used on it are unfit for the highly polished body panels. And conversely, to use the body tools on the chassis would mean that they would soon become so greasy and gritty that they would no longer be suitable for the body.

Use Only Clean Chamois

A chamois skin free from lint and absolutely clean is the best article for drying the body of the car. And the same holds true of the running gear. Wring the skin out after rinsing in clear water. Begin at the portion of the body first washed, wiping with just sufficient pressure to remove the water with the exception of a mist, which will quickly evaporate. To attempt to

wipe the surface perfectly dry is unnecessary as well as tending to injure the finish, since a chamois, soft as it is, has sufficient abrasive action to mar the finish if it is applied with sufficient pressure.

No car should be left unwashed for more than 24 hours. Mud in its various forms, in drying on a body of varnish, takes up the oil from the varnish and in so doing destroys the luster. Road dirt or dust picked up on the highways largely given to horse travel is often saturated with ammonia, and all such accumulations are destructive to the finish. Such road refuse, if allowed to dry upon the finish, not only will spot the varnish but fracture the film and cause it to decay and crumble away.

Mud and dirt from roads traversing lime districts are likewise destructive to both the luster and the fabric of the varnish, the latter disintegrating under the action of the lime. Many varnishes will spot under the effects

of soapy or dirty water. Washing removes all sorts of impurities on the surface of the varnish. These impurities tend to destroy the varnish, hence the importance of frequent washing as a means of preserving the car finish.

Despite the utmost care at the factory fenders will become dull after a time because the fender enamel has a peculiar affinity for dirt. The result is that a filmy coating appears over the surface to deaden the gloss. The longer this dirt remains the harder it will be to remove it and to restore the fenders to their original form. There are a number of preparations for removing the dirt and cleaning the enamel which may be purchased at any accessory store. Careful washing with soap and water, afterwards removing the suds before they dry and polishing with a chamois skin, will restore the finish. In an obstinate case, fuller's earth and water may also be employed with success.

RAILROAD USES TRUCKS

The Erie Railroad has begun to deliver inbound freight destined to New York by motor truck. Instead of floating freight cars across the Hudson River to New York and then unloading them, under the new plan

the cars will be emptied in Jersey, their contents placed on trucks, and the trucks carried to New York by ferry, where they will deliver the goods exactly to their points of destination. Later on it is the intention to use

freight car containers which hold just a truck load. The move on the part of the Erie Railroad is further evidence that all railroads will eventually use motor trucks for collecting and delivering goods transported in its cars.

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Despite the wonderful progress in motor car design and appointments, little or no improvement in riding comfort has been accomplished through steel springs alone.

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The Air Springs support the car on cushions of compressed air—virtually Shockless Spring Suspension. They overcome all disagreeable pitching, lurching and bouncing actions of the steel springs.

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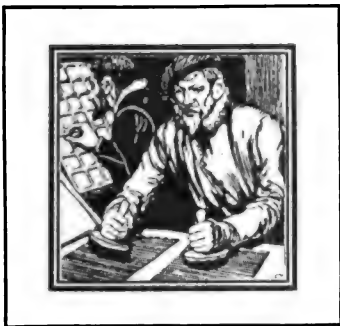
I WANT printed publicity that will properly reflect the high quality of my merchandise—not a mere printing job. I want my printing to pay for itself in real orders.”

You *can* make your printing pay—you *can* reflect the high quality of your merchandise—you *can* enhance your business prestige if you employ a printer who knows how.

It is not always costly cuts and art work and high priced paper that make a printing job successful. It is the skillfully prepared and properly presented message that “gets over” to the man who needs your goods.

We will be glad to tell you how it can be done.

MAY we send you a rather impressive folder that portrays several specimen advertisements together with information that will assist you materially in planning your next printing order? No charge. Phone or write.



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H. L. BECK
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Cor. Commercial & Leidesdorff Sts.

TELEPHONE DOUGLAS 401

San Francisco

THE NATIONAL SHOW IN REVIEW

(Continued from page 27)

shaft. The air is drawn in through a honeycomb screen which takes the place of a radiator and is delivered from the blower through a duct which runs along the tops of the cylinders. The air jackets are connected to this duct and the air flows from the duct down through the air jackets. High economy, light weight, and hill climbing ability are features claimed for it. The five-passenger touring lists at \$3,900, the three-passenger coupe at \$4,900 and the five-passenger sedan at \$4,900. It is made by the Fox Motor Car Company, Philadelphia.

The Driggs is a small well-made four-cylinder built on attractive lines, and resembles the small economical machines developed in Europe since the war more than anything that has previously been built in this country. The wheelbase is 104 inches, tires are 30 by 3½ inches, the engine is a four-cylinder L-head design 2½ by 4½, the list price is \$1,275 for the two or four passenger open models and \$1,975 for the four-passenger sedan. Wire wheels are standard, the spare being carried alongside the hood in the four passenger and the sedan and at the rear in the

roadster. Individual steps are used in lieu of running boards. The transmission affords three speeds and the clutch is a disc. The bodies are well finished and attractive. They are made of aluminum and upholstered in leather. The car, including the engine, is made by the Driggs Ordnance and Manufacturing Company, New Haven, Connecticut, and the other units used include Bosch starting, lighting and battery ignition, Zenith carburetor and Alemite lubricating system.

Gearless Steamer

The Gearless steamer is a good looking, powerful, comfortable car selling for \$2,600 as a touring car and \$2,650 as a sport roadster. Steam is generated in a sectional boiler located under the hood and the engine is a four-cylinder double acting design equipped with Walschaert valve gear. The crank case is bolted to the axle housing, while the cylinder head is hung from a frame cross member. A condenser takes the place of a radiator. The engine is 3 by 6 inches and the boiler pressure is 600 pounds. The fuel is kerosene, fed through an improved type of burner. No differential is

required because the right pair of cylinders is connected directly to the right axle shaft and the left pair of cylinders to the left axle shaft. The wheelbase is 127 inches and tires are 33 by 4 inch cords.

The Bay State is a six assembled from standard parts. It is noteworthy in that the cars are very attractive and unusually well finished. The engine is 3¼ by 4½ inches, the wheelbase is 121 inches and tires are 32 by 4 inch cords. The sedan lists at \$2,500 and the coupe at \$2,400; prices on the open models have not been announced.

The Sun at the Astor was interesting because it is the first low-priced, air-cooled car to be seen with good lines and a comfortable little body. It lists at \$475, weighs 1,000 pounds, has 26 by 3 inch tires, and a four-cylinder engine designed to develop 18 to 22 horsepower. The engine is in unit with a disc clutch and a three-speed transmission. An electric generator, storage battery and ignition distributor are fitted, but starting is effected through a pedal which sticks out below the frame to the rear of the fender on the left side.

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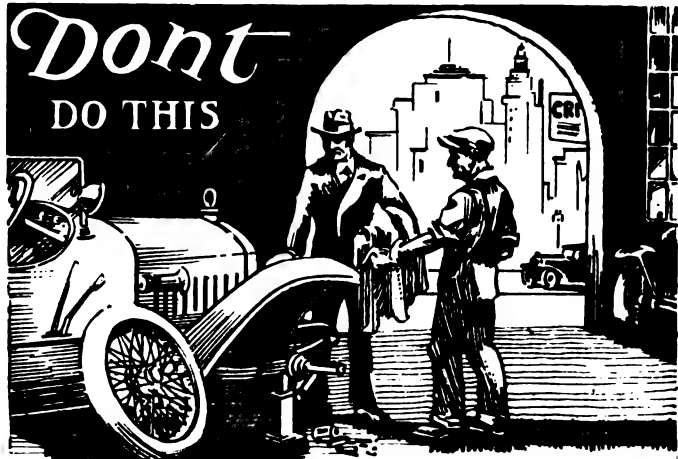
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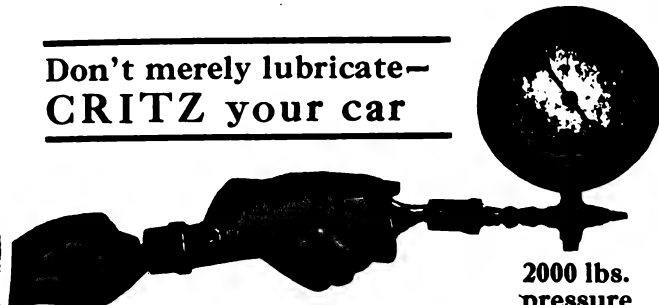
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KEEP TO THE RIGHT

The Left Is Now Sword Arm of British Columbians

AMERICAN motorists will be interested in the fact that on January 1 the rule of the road in British Columbia was altered to the universal practice of "keep to the right" prevailing on this continent. Behind this change is the story of the rapid development of touring trips across the international boundary line to take in the wonderful scenic beauties for which British Columbia is famous. This traffic started with the opening of the Pacific Highway, the great motor route of the Pacific Coast, which has Vancouver, B. C., as its northern terminus. Year by year as this highway has been steadily improved motor touring throughout British Columbia has become increasingly popular, California motorists figuring to no small degree in the number, while the run to Vancouver from points in Washington and Oregon has so advanced that hundreds of touring parties make the trip every week-end. The degrees to which this traffic has advanced is shown by the fact that for the first six months of last year, 14,628 parties, numbering 80,732 persons, crossed the line. On each of the

holiday week-ends of the season about 2,000 cars crossed the boundary line. Such figures show that British Columbia is very much in the eye of the motorist as an objective for touring trips.

Since the first settlement of British Columbia the rule of the road has been that prevailing in England, which is "keep to the left." The story of this rule goes back to the days of knighthood, when the sword was part of the personal equipment of gentlemen. As the sword is usually used with the right hand the English adopted the rule of keeping to the left, thus leaving the sword hand free to strike if need be. British Columbia was settled by descendants of these English gentlemen, and the custom once established became an integral part of community life and training.

Lifetime Habits Jarred

British Columbians were jarred out of the habits of a lifetime by the coming of the automobile. As the use of this method of travel increased by leaps and bounds and as the era of road improvement advanced, touring trips,

year by year lengthened as to distance, became popular. Naturally followed the drift of motor traffic across the international boundary, California, Oregon and Washington motorists taking in the beauties of British Columbia and residents of the Canadian province visiting the coast cities and points of interest. But, as conditions existed, a change of habits was demanded at the boundary, the States motorist being there compelled to change to "keep to the left," while the British Columbian had to change to "keep to the right." Naturally there was some confusion, and some motorists felt timid under the altered rule of the road.

As international motor touring advanced British Columbia recognized the need for altering this traffic regulation, and two years ago its legislature passed an act providing for the establishment of a "keep to the right" rule. And right here arose a difficulty which shows what it means to change a lifetime practice. In Vancouver Victoria, New Westminster and other sections of the province where motor touring was most popular street ca

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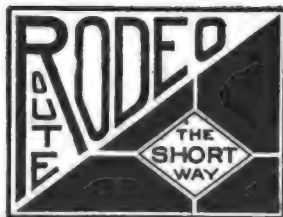
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9:00 a.m.	4:30 p.m.	8:30 a.m.	4:00 p.m.
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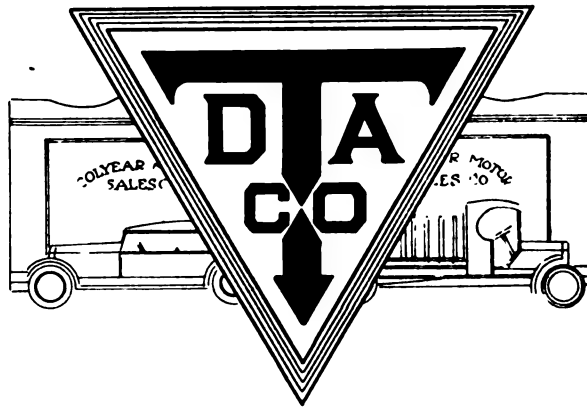
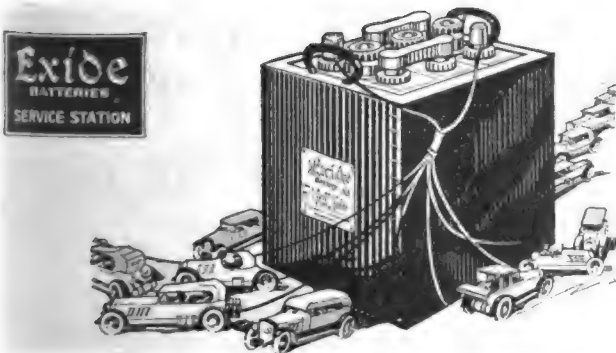
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traffic was handled by the British Columbia Electric Railway. The entire equipment of this company was based on the old rule of "keep to the left." Its cars had left-hand entrances, its switches provided for left-hand travel, and its overhead wiring was laid out for left-hand operation. To change all this meant not only money but time as well. So the new rule was put in force in the interior of the province last year, and with the aid of a legislative grant the B. C. Electric Railway started on the work of altering its system. This was carried out gradually, preparatory to a "quickfire" final change in the night hours of December 31, and on New Year's Day the new rule became the law of the land.

Wide Publicity Given

For several months previous to the establishment of the new rule, wide publicity was given as to the new traffic regulations. All holders of motor licenses were circularized, 24-sheet posters were used all over the coast section and in the cities at every street corner were displayed signs warning

the public of the change. Hence, when the change was made, the public was prepared. So thoroughly was the work done that there was absolutely no increase in the number of street accidents for the first week of the new rule.

With the establishment of the new traffic rule British Columbia becomes an even more attractive field than ever for Western motor tourists. The northern province is far famed for its wealth of natural scenery and with the development of its "good roads" program, good auto highways are provided to all points of interest, while hundreds of miles of scenic drives cover the well-populated districts. J. R. Davison, manager of the Vancouver Publicity Bureau, says on this score—"Nearly every tourist who visits Vancouver comments on the peculiar situation here because of the large number of natural attractions which are located within runs of 15 minutes, half hour or an hour or so from the center of the city. Our great forest parks and our magnificent beaches are within the city limits, while just

across the inlet are the mountains of the north shore with a wealth of natural wonders and scenic beauties that always please and charm."

Strong Appeal For Motorists

Vancouver, of which city Davison is the official host, is the metropolis of the province and the center of interest. It is directly on the Pacific Highway and from it ferry routes lead to the Vancouver Island Highway and the trip to Victoria, the capital of British Columbia.

British Columbia makes a strong appeal to the Western motorist because of its summer climate. Its northern latitude provides for relief from extreme heat throughout the entire summer and the nights, even in the heart of the season, are always cool while the summer rainfall usually consists of occasional showers, both welcome and refreshing. Another point of interest to motorists is that the northern latitude provides for daylight motoring of from 16 to 18 hours, the sun rising before 5 a. m. and darkness not settling before 10 p. m. in the heart of the summer.



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Because they are optically efficient, these lenses produce a solid band of light (with no streaks), practically as even as daylight, covering the ordinary state road its entire width and *they need no dimmers.*

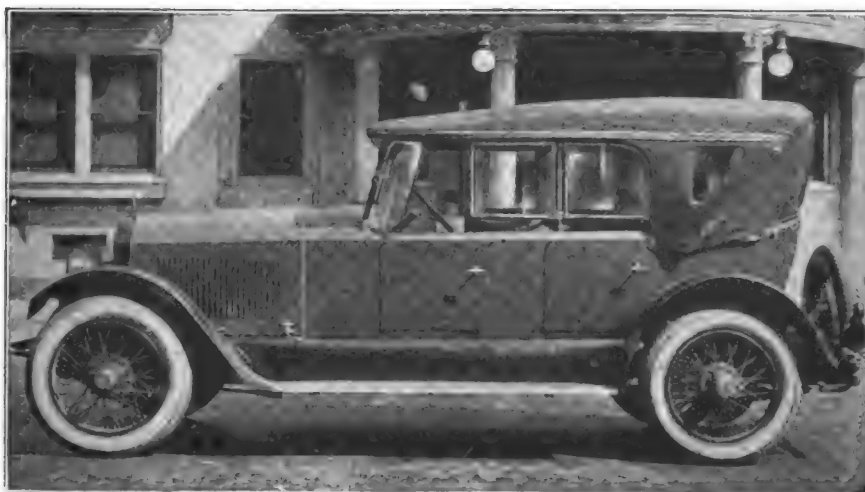
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THE CUSTOM BUILT BODY

(Continued from page 34)

holds it in that shape while running the panel back and forth through the hammer. The hammer sets it permanently to the exact curve that the workman held it to. The first time he runs a panel through the hammer he may obtain the approximate curve. Then he places the panel on the body framework to see how much more or less it must be curved, or perhaps he has a jig to place the panel on, and thus eliminates the necessity of carrying the panel to the body. He continues using the hammer until the panel is correctly shaped.

Rollers Form Beads

Beads in body panels are put in by two grooved rollers working together. The bead is formed in the edge of the panel by passing it through the rollers. Fenders are made by the use of the power hammer, unless they are pressed between two dies. The latter method is used when fenders are produced in quantity, but if a body builder wishes

a pair of fenders for a special job, they are hammered out.

The roof is made out of various materials. In some cases it is made of sheet metal, same as the sides. Then again it may be made of wood and covered with canvas, which is painted and painted until it forms a smooth surface. The texture of the canvas is completely obliterated. Special composition boards are also used for roofs. As in the case of the house, the motor car roof is supported by delicate rafters.

In producing a body the first step, of course, is the design. In most cases the first drawing will be a side view, 10 or 15 inches long. The body architect works out the principal details on this scale, and it is this drawing that the individual purchaser or the car manufacturer approves.

Practice Varies

From here the practice varies. In some small shops the body may be

built from such a design. In other cases a full sized drawing of the body is produced on a mammoth blackboard, and if the body is to be manufactured in quantity, each piece will be drawn in detail, the same as is done on other parts.

Ordinarily the body builder buys sheet aluminum or sheet steel and forms it into panels. He buys ash and other woods and cuts them up into ribs and other parts which go into the structure. The upholstery, whether leather or fabric, is purchased from concerns making a specialty of these products.

Body hardware can be purchased in a great variety of designs from concerns specializing in the manufacture of these articles. The same holds true for auxiliary seats, upholstery springs, and various other special items which go into the making of a motor car body.

THE PACIFIC AUTOMOBILE SHOW

(Continued from page 22)

largest cities of the country, and this is compared with the average of one to eleven which are owned in the nation as a whole.

The reason for this given by Alfred Reeves, general manager of the National Automobile Chamber of Commerce, is that in the cities we find congestion of traffic and poverty. But on the other hand, the motor car is the solution to the very thing that holds it back, strange as it may seem. Motor car facilities if properly extended will release the population of the cities and develop the outlying districts. This release of the population in the city proper means a lesser demand for property in the city and consequently a lowering of rents.

More parking spaces, garage skyscrapers, more highways, a bridge over the bay, these are some of the things that are needed to enable the city to come into its own in the matter of the ownership and increased efficiency through the use of the motor car. There are 38,216 passenger car dealers in the United States, 24,488 motor truck dealers, 59,093 garages and 55,521 repair shops.

The sixth annual Pacific Automobile Show is the reflection of the conditions in this stupendous field. It is the show window of the industry and as such is the most important of the events of the year for manufacturer, distributor, dealer and buyer, and

usually the latter takes as keen an interest in the event as the dealers themselves.

Just as milady waits for the dictates of Dame Fashion expressed through the exhibition of the modes and styles in the fashion show and the show windows, so does the motor car owner and prospective owner look forward to the automobile show for a decision as to the car he wants to make his own. It is the fashion show of the automotive industry.

If you would be one of the informed on things modern and things mechanical, the automobile show at the Civic Auditorium is undoubtedly your one best bet.

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"KEEP TO THE RIGHT" is now the rule of the road in British Columbia—change made Jan. 1.

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HERE AND THERE IN MOTORDOM

Bright Future For Exports

From what seems to be the consensus of opinion in export department circles of the large automobile and tire manufacturers things look reasonably bright for the future.

Although international exchange and credit are, of course, uncertain, the world in general is settling down to the normal pursuits of peace, while it is evident that the field for the motor vehicle, even in remote regions, is becoming wider every day.

In Shanghai, for instance, the city government has just permitted the incursion of a motor bus line, the first ever known in China. The chassis are of American make, the body and trailers being built in Shanghai.

Russia very evidently is receding from her position of isolation and much merchandise is finding its way there from European countries. Perhaps the time is not far distant when America will re-establish relations, thinks a well-known car export manager.

South America offers a vast and virgin field, while Mexico is said to be in better condition than at any time for many years.

All in all the automotive field appears to have good reason for optimism in future export prospects.

Rolls-Royce Expands

Plans for increased activities are rapidly taking shape at the Rolls-Royce plant, Springfield, Massachusetts. A definite schedule for production for 1922 has already been worked out, and the first of the year will mark the beginning of largely augmented operations.

Several additions have been made to the

Coming Events

Feb. 8-9—National Tractor Show and Meeting of Society of Automotive Engineers.

Feb. 11-18—Southern Automobile Show, Atlanta.

Feb. 11-18—Sixth Annual Pacific Automobile Show, Exposition Auditorium, San Francisco.

March—Annual Automobile Show, Santiago, Chile.

April 24-29—Annual Meetings of United States Good Roads Association and Bankhead National Highway Association, Phoenix.

May 1—Speedway Race at Fresno, California.

May 8—Speedway Race at Cotati, California.

May 30—500 Mile Race, Indianapolis.

personnel of Rolls-Royce, to departmentalize and more clearly define organization lines. M. A. Pollock, formerly associated for eight years with sales and advertising of the Locomobile Company at Bridgeport, has been made assistant sales and advertising manager of Rolls-Royce. Mr. Pollock was Vice-President and Manager of the Leonard-Pollock Motor Company of Springfield.

P. D. LeVeness, formerly associated with Pierce-Arrow, Locomobile and other high-grade manufacturers, has joined the sales

organization of Rolls-Royce as works sales representative. A. C. Warren, a well-known metropolitan salesman of long standing, previously of the Simplex and later with the Mercer distributors, has become identified with the New York Branch of Rolls-Royce, at 785 Fifth Avenue.

Races at Los Angeles

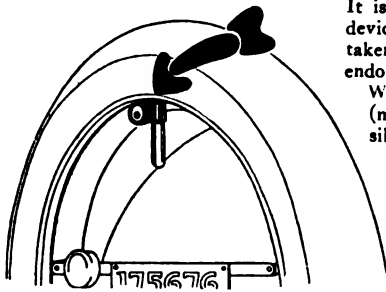
California racing fans are looking forward with considerable interest to the big 250-mile automobile race which will be held on February 22, Washington's Birthday, over the boards of the Los Angeles Speedway. This event will find some of the country's most notable drivers in action, while additional interest is to be provided by the entrance of foreign pilots.

One of the European pilots who will be seen in action is Enrico Bordino, premier Italian speed king, who is now en route to California. Bordino will pilot a Fiat, this being the same car which he drove in the Italian Grand Prix at Brescia, before the King of Italy and the Italian court. It is recognized as one of the fastest cars in the world and in the Brescia classic did 186 kilometers per hour.

The mention of Bordino's name does not include the field, known to California auto racing fans, members of which have established speedway history here during the past year. On hand when the starter's flag drops at Los Angeles on Washington's Birthday will be Ralph De Palma, Eddie Hearne, Tommy Milton, Roscoe Searles, Joe Thomas, Eddie Miller and others.

Drivers in the coming race will shoot at the world's record for the 250-mile event set by Eddie Hearne on the Los Angeles track on Thanksgiving Day last when he circled

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This lock may be purchased from your dealer. Price, \$5.00

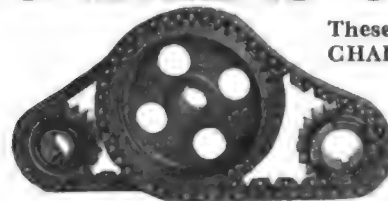
It is a smooth, highly finished device that can be put on and taken off in an instant. It is endorsed by insurance officials. Works on the valve stem (making it practically impossible to remove the tire from tire carriers having a round hole).

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These **LINK-BELT SILENT CHAIN DRIVES** have been thoroughly tried out on CADILLAC CARS. They will give you quiet and satisfactory service for many thousand miles. They are in stock at San Francisco and Los Angeles

ready to be installed in your car. Order direct or through your garage.

The **LINK-BELT UNIT SILENT CHAIN** marks an important step forward in the art of Silent Chain Driving as applied to automobiles.

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SPRINGS, WHEELS AND BUMPERS REPAIRED

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WE SPECIALIZE IN BUICK REPAIR WORK
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"STEP ON THE THROTTLE"

To hesitate now is to lose

You're at the foot of the hill.
Will you take the top with the leaders
Or stay at the rear and eat dust?

The business depression is easing, it is taking the upper grade.
Greater sales effort with proper advertising support will be rewarded.



Cameo Signs will do their part—Will you do yours?

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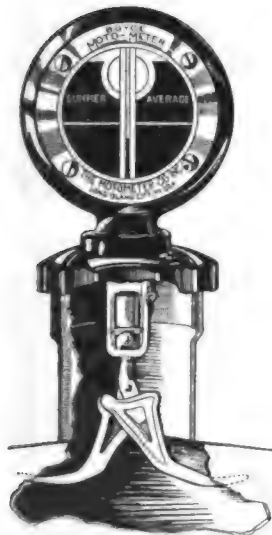
SAN FRANCISCO—112 Market St. Phone Sutter 6115

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"THE SIGN THAT STAYS IS THE SIGN THAT PAYS"

Protex Moto-Meter Lock

**HANDCUFFS YOUR MOTO-METER
TO YOUR CAR
—FITS ANY CAR**



MADE IN CALIFORNIA

No keys to lose or forget.

No Lock to rust or get out of order.

No Bars to fall off or rattle.

A positive insurance against theft or loss of Moto-Meter or cap.

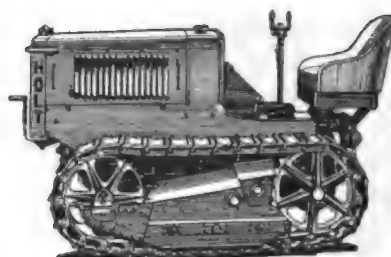
Does not change appearance of car.

Put a Protex on your Moto-Meter and stop worrying. A child can put it on but a shop must take it off. No inconvenience in filling radiator. For sale by all Dealers and Garages for \$2.00.

PROTEX MOTOR METER LOCK CO.

Phone: Market 9163

701-709 Golden Gate Ave. San Francisco, California



**At Last—the Supreme
Small Tractor**

CATERPILLAR
Reg. U.S. Pat. Off.

T-35 Tractor

Size has been limited without sacrificing power, weight is lessened without imperiling strength in this latest Holt contribution to economical power forming. Only the development of new qualities of steel and better methods of heat treatment have made possible the production of "Caterpillar" T-35 Tractor. It is only 48 inches wide and 52 inches high, weighs but 4,000 pounds, yet develops a liberal surplus of power over its 14 drawbar-horsepower rating. You will want full information regarding this new Holt achievement. Write for it now.

THE HOLT MANUFACTURING CO.

Stockton, California

Peoria, Illinois

San Francisco, California

Los Angeles, California

Spokane, Washington

the big bowl at a rate of 110 miles per hour. This is a mighty fast clip, but as the track is reported to be in good shape it is anticipated that new figures will be established.

Twenty-five thousand dollars in prize money will be distributed to the drivers competing, and this fact will spur them all on to exceptional deeds. Plans are being made for a record attendance.

Saving the Redwoods

Substantial progress in the movement to save the redwoods of California is announced by the Save the Redwoods League in its annual report for 1921. To date approximately half a million dollars have been applied to the saving of redwoods in Humboldt County. The greater part of this amount has been secured during the year 1921.

Foremost among the accomplishments of the past year was the securing of the State appropriation of \$300,000 to save some of the finest redwood groves along the State Highway in the basin of the south fork of the Eel River. Under the direction of the State Forestry Board the plan for saving groves with this appropriation has been completed.

During the year the league itself has deeded to the State of California 263 acres of redwood land acquired with funds donated by its members. In addition the State has acquired title to pieces of redwood timber land previously purchased through appropriations by Humboldt County and donations from Wm. Kent and Stephen T. Mather. All of these pieces are located in the basin of the south fork of the Eel River.

Carroll Named Manager

An item of considerable interest to automotive trade circles on the Pacific Coast was

the recent announcement of the appointment of Frank E. Carroll as the Pacific Coast manager of the New York Lubricating Company, which concern handles the Monogram products. Carroll is widely known in California, having served for a long term as manager of the San Francisco branch of the Goodyear Tire and Rubber Company. In his new position Carroll has charge of the entire western territory for the concern with which he is now affiliated, and included under his executive scope are all of the States west of the Rocky Mountains, western Canada, Mexico, Alaska, the Hawaiian Islands, the Philippines and the Orient.

Diamond Signals Reduced

On account of the increased volume in the sales of Diamond Signals, and to meet the popular demand for lower prices, the Diamond Signal Company has made a sweeping reduction in the price of its signal. The pilot set now sells at \$15.00 and the plain set at \$12.00, these prices including wire and bulbs. Due to the fact that the Diamond Signal gives the three signals, Stop, Right and Left, it is now very low priced.

Gill Batteries for Fire Trucks

Gill batteries have been selected for use in the trucks of the San Diego and Pasadena, California, fire departments, having been chosen after tests made by these municipalities.

Batteries for service in fire trucks must always be on the job. Night and day a fire truck must be ready to answer a call upon a second's notice, and the battery, which plays so important a part in the service which the city looks upon it to deliver in case of an emergency, must be absolutely dependable

and ready to deliver the vital spark when it counts so much in saving life and property and preventing property loss.

Almost a year ago the San Diego fire department chose a Gill battery for one of its monster trucks. So efficient did it render its service that when it became necessary to replace two other batteries the Gill was again specified in preference to all other batteries.

The batteries manufactured by the Gill Storage Battery Company for automobile use are the same as in use in the fire trucks, except for size, and the same high standard of quality and workmanship is built into them.

New Woodward Products

George H. Woodward has announced to the automotive trade that his firm is now prepared to promptly supply Woodward heat treated light weight gray iron pistons in the semi-finished state and Woodward superior wrist pins and "quality" piston rings.

The firm of Woodward is generally and favorably known throughout California as one of the pioneer cylinder regrinding organizations.

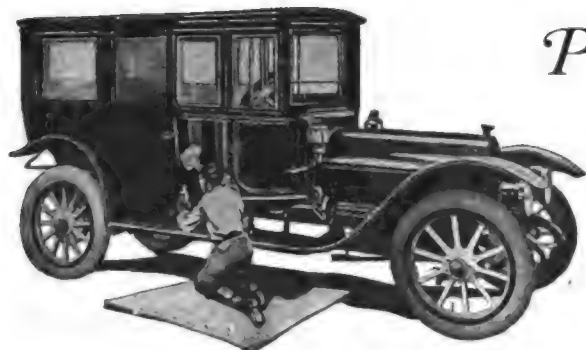
The cardinal features of Woodward pistons are:

Lightness—but to secure which those other essential requirements have not been sacrificed.

Lateral rings—to keep the piston round. An exclusive Woodward feature.

Soft gray iron—of the finest quality to which is alloyed the proper percentage of other materials to give strength.

Heat treated—to anneal the casting and release the stresses and strains in the metal, the greatest safeguard against scored pistons.



W. P. FULLER & CO.
"Since '49"

Prolonging the Auto Show

DURING this month you will visit the California Automobile Show and will see many many cars with their mirror-smooth surfaces. You will be impressed by their beauty of finish. You will recall that your own machine looked like that once and there is no reason why it cannot be restored, providing Fuller's Auto Enamels are used.

For the body, use Fuller's Auto Enamels. For the radiator our Radiator Aluminum Bronzes.

Varnish your car before the paint loses all its gloss. A coat in time saves nine.

The ALEXANDRIA Los Angeles' Leading Down-Town Hotel

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THE AMBASSADOR HOTELS SYSTEM

THE AMBASSADOR, NEW YORK CITY
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At each of these hotels the rates are moderate

MUSSO'S Auto Home CAMPBED

Known for
Comfort, Quality and
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Price Complete
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Order from your dealer;
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AUTOMOTIVE FINANCE CORPORATION

Phone Sutter 563

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San Francisco



MOTORISTS who patronize Bowser Piston-Type Measuring Pumps are assured of accurate measure and dry, power-full gasoline.

The displacement of the piston, moving through a stroke controlled by positive mechanical stops, discharges an exact measure in any desired quantity directly from the underground tank into the automobile reservoir.

The patented Centrifugal Water Separator, through which all gasoline must pass just before it is discharged, eliminates all water and foreign matter. Thus, Bowser-served gasoline assures better carburetion—snappier response to the accelerator—less carbon deposit.

Gasoline merchants who serve with Bowser Pumps are assured of more and better satisfied trade.

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S. F. BOWSER & CO., Inc.
1315 Creighton Ave., Fort Wayne, Indiana

612 Howard Street
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BOWSER
ESTABLISHED 1895
PISTON-TYPE MEASURING PUMPS

Sales offices (with Service Departments) throughout the United States and in principal cities of the world.



**TUTHILL
TITANIC SPRINGS**

Three Out of Four Springs Break at the Very Point Where
**TITANICS ARE GUARANTEED FOREVER,—
THE CENTER.**

DEMAND TITANICS FROM YOUR DEALER

Manufactured by
PACIFIC AUTO SPRING CO.
1111-1117 West Pico Street Los Angeles, California

Westinghouse Air Brakes
On Your Trucks

They not only insure safety, but will soon pay for themselves in increased mileage—a fact which is being demonstrated to such large users of trucks as—

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CARLOAD NUMBER 4****GOES TO****PARAGON TOOL CO.**

*All good things are imitated,
but look inside for the name "DE-
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LIGHT WEIGHT CAST IRON PISTON
"The Successful Light Weight Piston" ©

MORE THAN 12,000 PISTONS IN ONE ORDER

The largest piston order ever shipped to the Pacific Northwest.

This, our fourth carload, is one of the largest orders for replacement pistons ever shipped anywhere.

Only two conclusions can be drawn from such an order.

First that DELUXE pistons are miles ahead of all others in performance and sales.

Second that the Paragon Tool Company is just as far ahead of other concerns in aggressiveness and foresight. This means service DELUXE for the Pacific Northwest, as in all parts of the country.

Motorists and dealers throughout the Northwest are thus assured of the piston they want, when they want it. The standing of the Paragon Tool Company, our warehouse representatives, assures every motorist, dealer, regrinder, repair man, of the ultimate in service and fair dealing.

This carload order represents pistons for over fourteen hundred different makes. Your motor can be supplied, no matter what it is.

Motorists from Coast to Coast are fast learning the wonders DELUXE pistons will work in a motor and are demanding them.

More miles on less gas, better lubrication with less oil, more speed and power with less vibration, more motoring pleasure with less upkeep expense. These things make DELUXE LIGHT WEIGHT CAST IRON PISTONS the logical and ideal piston for any motor. Every motor, old or new, needs DELUXE pistons. Every dealer and repair man throughout the country can get DELUXE pistons in twenty-four hours or less. This is Service DELUXE.

DELUXE pistons and coreboxes for making the same are thoroughly protected by U. S. and foreign patents. We intend to vigorously defend our rights and prosecute all infringers.

Patented and Manufactured by

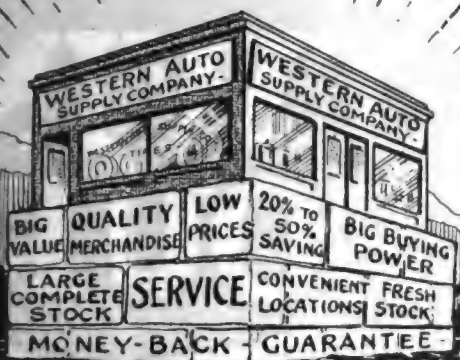
Clark-Turner Piston Company

INCORPORATED

Los Angeles, California

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40 Stores

Built on a
Solid
Foundation

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40
STORES

SERVICE, SATISFACTION and ECONOMY spell the keynote of our success. The good will of our customers is the solid foundation of our business.

Handling only standardized automobile accessories and tires, buying them in large quantities direct from the factories and selling to the consumer at a price 20 to 40% lower than they can be purchased elsewhere, has enabled us to build up a chain of 40 dependable stores where everything pertaining to an automobile can be purchased. Everything we sell carries our money-back guarantee. Can you doubt that we have the good will of the motoring public? Make Western Auto your motoring headquarters.

Come in or send for our large free catalog.
Mail orders are promptly and efficiently
filled by all stores.

WESTERN AUTO SUPPLY CO.

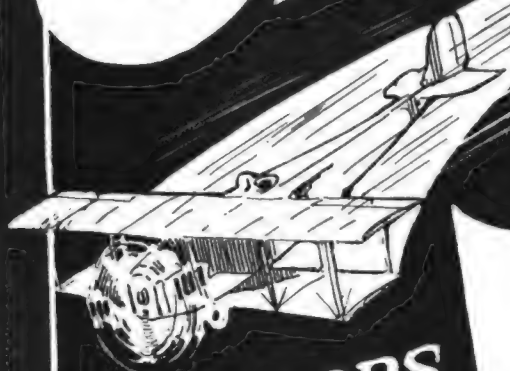
"Everything for the Automobile"

IF IT'S FOR AN AUTO
WESTERN AUTO HAS ITTHERE'S A WESTERN
AUTO STORE NEAR YOU

Los Angeles (4 Stores)
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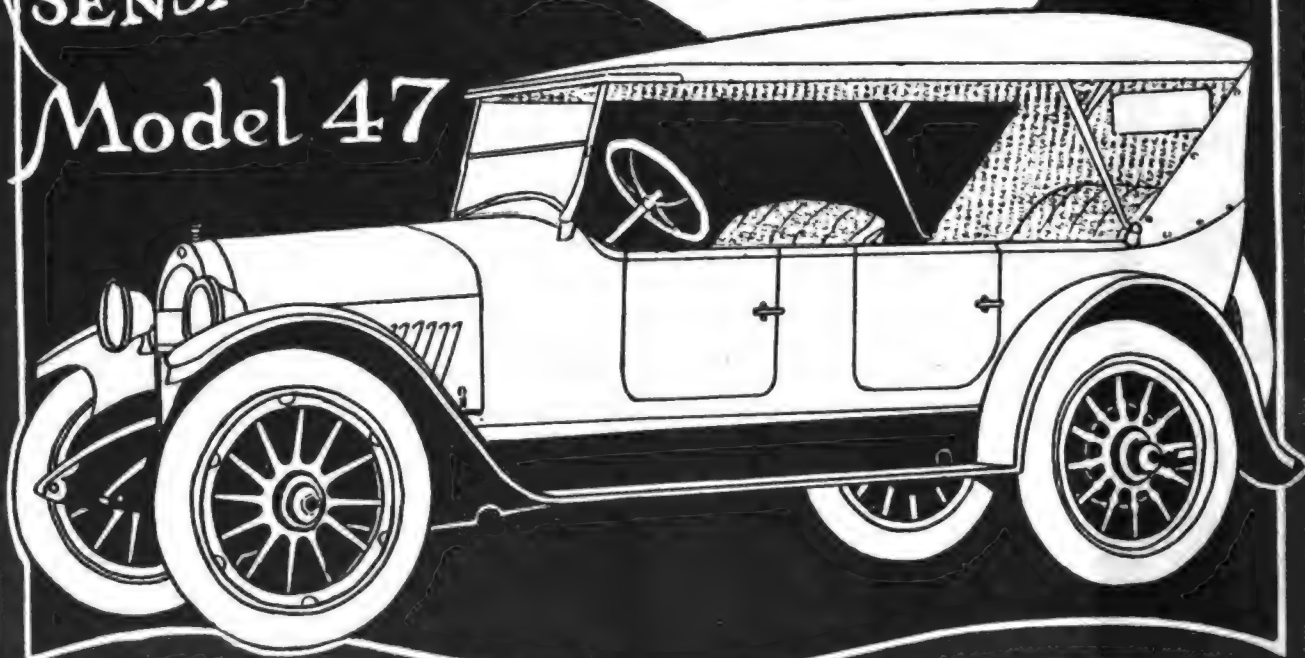
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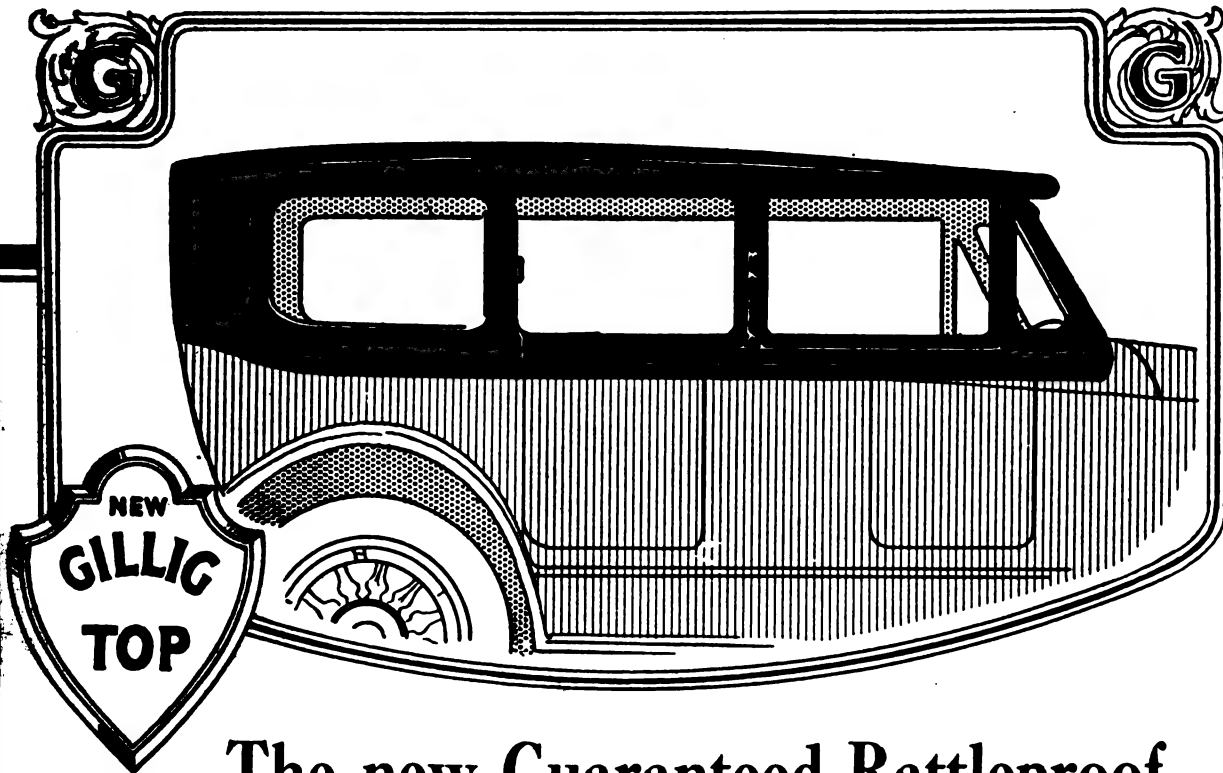
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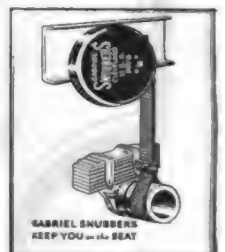
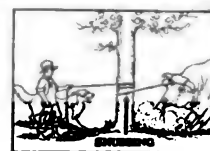
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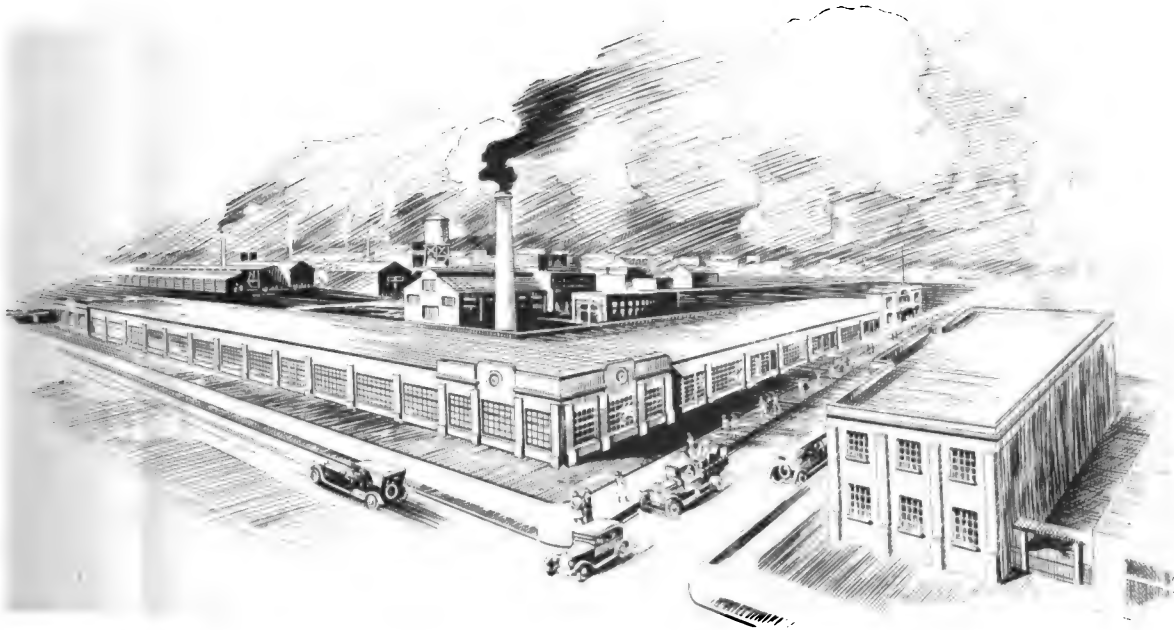
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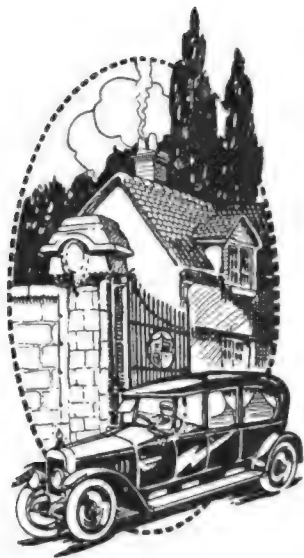
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CURRENT COMMENT



Results of the Pittsburg Road Test

The article of Mr. Cottrell, setting forth the facts in connection with the test of concrete road construction at Pittsburg, appearing in this issue, should be read and digested by every person interested in California road problems.

This test fully justifies practically every criticism made by the automobile clubs concerning the road construction methods which have been and are now being followed by the State Highway Commission.

The Columbia Steel Company and the other interests which contributed are entitled to all praise and credit for having undertaken and completed the

enterprise, and it is to be regretted that the steel reinforcement method does not appear to be of sufficient value to pay for the additional cost required. It appears clearly that on equal foundations, thickness of slab is the only insurance of permanency.

The 4-inch slab of concrete, of which so much has been laid in California, and the 5-inch reinforced slab which is now being laid by our Highway Commission, are both absolutely worthless and cannot last the life of the bonds issued to pay for them. The 5-inch type of construction was the first to disintegrate under the test. No 4-inch pavement was considered worth testing.

Our State Highway Commission has learned little, apparently, as the result of its years of experience and millions of expenditure. State Engineer Fletcher presented specifications for the "ultimate road," suggesting that his proposed form of construction might be ultimately adopted for this State, as the best. This "ultimate road" was one of the first to break down under the test.

The State Highway Commission still continues to expend millions of dollars in construction along the lines of these absolutely discredited specifications, and apparently there is no intention upon the part of the State authorities to profit by past failures.

Roads and Motors Will End War

Irvin S. Cobb, famous American author, would solve the war problem with good roads and automobiles. He said at a recent banquet:

"The minds of all mankind today are concerned with the ambition and the hope of working out some feasible scheme of doing away with warfare among the races of the world, and with all modesty I want to offer a formula which at least is a beginning toward that end, and I offer it in seriousness. Give to every people of every land better roads and more automobiles and we will do away with much of the ill-will that exists between human beings on this planet today.

"Back in '61 had there been broad, smooth highways that ran from the Gulf to the Lakes, and if the man who lived in South Carolina could step in his lizzie and turn on the gas and cruise away to Vermont and find out

that the people there were of his own blood and had much the same aspirations and the same desire for decent and peaceful and orderly government, this country would never have been rent by a great Civil War.

"And I will go further than that. From my own knowledge at the front and behind the lines of how the civilian populace—yes, and the soldiers of warring Europe—felt, I am constrained to believe that had it been possible prior to 1914 for all the peoples of Continental Europe to have at their command the same quality and abundance of cheap priced cars which the run of human beings in this country can have, and had there been no artificial barriers at the national boundaries to keep neighbor from seeing neighbor, I am prone to think that not even Prussian militarism could have

driven all the eastern part of the world into a dreadful struggle.

"But when you get to know a man, and you do know him better when you are riding in a car along the high road than you ever can from a railroad train—when you get to know him, you find out that he is the general run of human beings in one land and much like the general run of human beings in another.

"And I mean it when I say I believe that the spread of the use of automobiles is going to do as much to teach one nation that another nation is made up of decent chaps and to cure them of their old rivalries and feuds and bitternesses as any other agency on God's green footstool can hope to do."

Cobb may not have found the cure but, as he says, his formula "is a beginning toward that end."



Foothill oaks near Mt. Tamalpais.

MARIN COUNTY---THE LAND OF TAMAL

Vacation Land of San Francisco District Has Romantic Story

By VONARD FRASER

MARIN COUNTY! Perhaps no other district of California includes within its boundaries so much and so varied a scenic attraction. Mountain and rugged coast, rolling hills and pleasant valleys, these combined with a romantic history that is interwoven with the records of Indian, Spanish and American occupation, make it one of the most storied of the lands about the bay.

Springtime in the year eighteen hundred thirty-six. A tiny rowboat wending its way over the placid waters, down through the Straits of Carquinez from Martinez to the Marin shore. Two young persons in the bow of the boat interested more in each other than in the pageant of beauty that passed before their eyes. The two Indian oarsmen laboring mechanically at their task with no regard but for the rhythmic swing of the paddles. The

youth, Captain William Antonio Richardson, an Englishman, who had just arrived on a whaling schooner from Britain and who had been given a grant to the Sausalito Rancho by the Mexican government. The girl, his wife, the beautiful daughter of Ygnacio Martinez, after whom the county seat of Contra Costa was named.

Another spring morning in the month of May, 1850. A single horse with two riders making its way up the steep mountain trail from Bolinas to San Rafael. The face of the first rider peeps out from under the soft folds of a mantilla as she listens to the liquid Spanish of the young caballero who rides behind her. As they arrive at the village there comes the peal of the mission bells. The young caballero was Francisco Sebrean, and the bride, Senorita Maria Briones, daughter of one of Marin's oldest pioneers. This

was the first marriage recorded in Bolinas.

The Dawn of Romance

Here was the dawn of romance in the shadow of Tamalpais in the little county of Marin. And many a man and many a maid have plighted their troth at California's Gretna Green in San Rafael since Don Antonio and his young wife were rowed down the arm of the bay, and since Senorita Briones became Senora Sebrean in the little mission town. For the lure of romance still lingers in Marin, whether it be in the shadowy silences of the gigantic redwoods, or on the banks of the crystal streams that wind like brightly colored threads about her verdant hills.

In the days of Don Antonio the Sausalito Rancho was the source of the water supply of Yerba Buena, which was later the city of San Francisco.

The water was carried in tanks across the bay and there distributed to the inhabitants of the mission settlement. A tule boat manned by Indians was the only ferry in operation, and this was operated on a schedule similar in its infrequency to the automobile ferries of our own day.

The first English speaking settler in Marin County was John Read, who came there in 1826 and resided in Sausalito until 1834, when he received a grant for Rancho Corte Madera, north of Sausalito.

Marin has a place in bandit history as well as in the chronicles of the followers of law and order. Here was the main district of operation for Bernardino Garcia, known as "Three Fingers Jack." He was at the height of his notoriety in the days of the Bear Flag revolution, and one of his principal crimes was committed shortly after California was proclaimed a republic.

The Bear Flag party were short of ammunition and two of their number were sent after a store of powder which had been hidden in the vicinity of what is now Healdsburg by General Vallejo. The two scouts were taken prisoner by Garcia and later murdered. The wrath of the Bear Flag party drove Garcia from Marin and he traveled to San Benito County, where he joined Joaquin Murrietta, and it was while in the service of Murrietta that he was slain.

Angel Island, the Government immigration station, is really a portion of Marin County and was probably connected with Tiburon and Belvedere in the days of the Indian occupation.

Tiburon and Belvedere

Some of the most picturesque scenery of the Marin Peninsula is to be found on Tiburon and Belvedere. Paradise Cove has long been a favorite picnic spot for San Francisco motorists, and on the road between Tiburon and Belvedere there are still to be found some of the remnants of the good ship Tropic Bird which was beached and converted into a dwelling place.

The first record of the Indians in Marin County comes from the diary of Francis Fletcher, chaplain of Sir Francis Drake in the famous expedition of the Golden Hinde. The English captain in seeking a northwest passage to the Atlantic, the fabled straits of Arian, was forced back by the stormy winds and sought refuge under the lee of Point Reyes in the harbor which has since borne his name. Here Drake encountered the Indians by whom he was looked on as a superior being.

The record of the voyage of Sir Francis Drake was published in 1628. It is a document of extraordinary interest with its quaint spelling and odd grammatical style turns. The ex-

pedition was made up, so says the record, "of gentlemen and saylars" drawn together by the love of adventure and plunder; "a sort of cogging and lying knaves," "a company of desperate banckwrouptes that coude not lyve in theyre countrye withoute the spoyle of that as others had gotten by the sweate of theyre browes."

The "hard crowd" needed a firm hand to direct them and they found it in Drake, one who warned them "take heed for yf I fynd them in my way I will surely synke them." "This tyrannous and cruell tirant thoughte it not goode to returne by the streits of Magellan least the Spaniards shoulde there waite, and attende for them in great numbers and strengthe, whose hands, he being left but one ship (the remainder being wrecked off the Farallones) could not possibly escape."

It is no wonder that Drake, after rounding the dangerous Point Reyes, gave thanks when he came to safe

anchorage in the harbor. Now you will find only a lonely fisherman or two on the wharf that serves as a landing for the fishing craft. Around at Point Reyes there may be a spanking 40-mile breeze blowing, but in Drake's Bay you will find not a breath of wind and the waters of the bay lie as smooth as a mill pond. The bay does not seem to be a part of the ocean; it bears far more of a resemblance to a lake, so calm is it. The cliffs that shut off the northern blasts form a perfect semicircle of towering white, falling sheer from the bluff to the beach.

It is only a 2-mile jaunt out to the lighthouse at Point Reyes where the contrast of wind and surf can be noted.

The Spanish Expedition

The next record of the Indian tribes of Marin is found in the story of an expedition made by the Spaniards about the time of the founding of the Mission Dolores. The expedition



A mountain brook at Muir Woods.

crossed the straits at Lime Point and went northward over the mountains. They encountered the Olympali tribe at Olympalis and were kindly received by the Indians. The biographer of Junipero Serra, Father Palou, records that "in 1776, after the Presidio and before the Mission (of San Francisco) were established, an exploration of the interior was organized as usual by sea and by land."

In the northeast part of the county, near Novato, the first adobe structure was built by the Indians under the instruction of the Spaniards.

The second adobe structure in Marin was built by Camillo Ynitia, last chief of the Olympali. He secured three successive patents for his land, first from Spain, then Mexico and lastly from the United States. Later he sold the rancho for \$5,000, which he is supposed to have buried before his death somewhere in Marin County.

When the Spaniards first visited the county there were said to be 30 different tribes of Indians with different dialects and different chiefs.

The mounds of Marin County have been excavated and evidences of an extensive Indian civilization have been unearthed. Mortars and pestles, pipes, wampum, skulls and skeletons and arrow heads have added to the California ethnological collections of the University of California and Stanford University.

The Marin Indians were experts with the bow and arrow, the bow-strings being made of nerves taken from the deer which at that time were plentiful in the peninsular hills. They dwelt in tiny wigwams fashioned of

willows and tules on the banks of the streams which are so plentiful in that district.

Marin, after whom the county was named, was chief of the Lacatuits, and between 1815 and 1824 vanquished the Spaniards in several encounters. He was finally captured, subsequently escaped and was recaptured and was saved from death only by the interposition of the mission fathers at San Rafael. Marin was converted to Christianity and died in San Rafael in 1834.

Tamalpais the Sentinel

Tamalpais, the mountain, is the central point about which there figures a great deal of Indian mythology. The old sentinel of the Marin Peninsula towers 2,700 feet into the clouds, and the fogs often wreath its peak in a hoary beard of mist. Forests and chaparral cover its sides, and many a tiny creek rolls its way down from the craggy heights.

The Nicasio Indians used to live near Mt. Tamalpais and it is thought that their language gave the mountain its name. "Tamal" means "coast" and "pais" "mountain." There is also a supposition extant that the mountain was named after an Indian tribe called the "tomales." Another derivation which has been given is from the Aztec "tamal" meaning boiled cornmeal and the Spanish "pais" meaning country, or a combination of "tamal" from the Tamal Indians and the Spanish "pais." The Tamal Indians probably received their name, however, from the place rather than the place from the Indians.

The name "Bolas" or "Baulinas" is supposed to signify "stormy," while the name of the county seat, San Rafael, was originally Rafael and the "San" was prefixed on the mistaken notion that the town was called after the archangel. Sausalito signifies "little willow copse" and Point Reyes is "the point of the kings."

There is a delightful little trip that many motorists neglect by following the main line of traffic. It requires a turn to the left at Sausalito and a drive over the Government road through Fort Barry to Point Bonita. It affords a vista of mountain and sea, a remarkable view of the Golden Gate and San Francisco and many a little inlet and rocky bit of coast line. The view as one stands at the lighthouse and looks out on the Golden Gate is well described by a tourist of the days when motor cars were unknown:

"Across the narrow strait lies the Presidio, the cliff and seal rocks. San Francisco's hills bound the southeastern horizon; vessels of every fashion sail or steam to and fro, laden with the wealth of nations, while the jagged coast stretches northward followed by breakers that form a long line of foam. The eye looks north as far as Bolinas and the reef below Duxbury Point, to reach which is a day's journey along a coast and mountain road of rare beauty. Bolinas with its pretty bay, the greater part of which at low tide is transformed into a great sand bed, slumbers quietly a great part of the year, content with its rich soil and gigantic clams, until the summer solstice sends humanity to its beaches for breath of which there is abundance. Yet time was when Bolinas supplied San Francisco with its lumber. Unique and wild as is the coast road from Sausalito to Bolinas it hardly eclipses the mountain route between these two points."

Mill Valley, Muir Woods

Another pleasant motor journey of the Marin district is that which follows the trail to Mill Valley and Muir Woods. This section of the county lies under the very shadow of Tamalpais which rears its barren head majestically above the surrounding country. From "Inspiration Point," a short distance from Mill Valley, a wonderful panorama is unfolded with the triple headed mountain peak as the background for the scene.

The motorist may if he will make a complete circuit of the mountain following the famous Dipsea trail to Willow camp where the Olympali club holds its annual jinks on the strand of Stinson Beach. Then the return is made through Manzanita Canyon and Tamalpais Valley, through



The coast of Marin County north of the Golden Gate.

(Continued on page 34)

THE PITTSBURG HIGHWAY TEST

By C. C. COTTRELL

Manager Good Roads Bureau, California
State Automobile Association

BETWEEN November 9th last and the end of January of this year the record of the test highway at Pittsburg showed that the traffic amounted to 3,668,100 tons which, even in that short period of time, is equivalent to the traffic of about ten years on our ordinary State highways.

Each one of the thirteen different types of concrete roadway has been subjected to the same test, and except for the design of the pavement itself, under identical conditions. The same subsoil exists under each section; the same temperature variations affect each unit; the rainfall is the same; and the degree of saturation of the sub-base as identical as it is humanly possible to make it. The mixture of the concrete is uniform throughout, and the age of the pavement varies only by the time between the beginning of the laying of concrete to the completion of the operation, a factor having no bearing on the comparative results, as ample time was given the concrete to "cure" before any traffic whatever was allowed to use the roadway.

Before analyzing the results obtained one should know that except for one of the thirteen sections absolutely the only variations are in the thickness and shapes of the several units, the quantity and manner of placing reinforcement steel, and the construction of expansion joints. The exception to this is that between the concrete and the dirt subsoil on section A there was constructed a crushed rock base 1 foot thick at the center and 4 inches at the outer edge of the pavement.



Section B (California Highway Commission Standard) after 3,668,100 tons had passed over it.

Reason for Uniformity

The reason for all this uniformity was because those having to do with the carrying on of these tests sought to get comparable results. This seemed to be impossible in ordinary practice because of the tremendous variations in quantity and quality of traffic, different subsoil conditions, construction methods, the "personal equation" in inspection, climatic variations, etc. The preliminary report of July, 1921, of those carrying on this investigation states: "The thirteen types selected for investigation are the results of conferences with and suggestions by leading Federal, State and county highway engineers, and represent their ideas as nearly as possible within the scope of this test," and also that "this is a public test for public information."

Of the thirteen sections, but three are in general use in the western part of the United States. Sections A and B are California Highway Commission stand-

ards and are identical in all respects except for the prepared rock sub-base under section A. Section J is commonly referred to as the "Arizona standard" and it is understood was constructed in the test highway at the request of the people of that State. The other types are not in general use, in the West at least. They embodied ideas in use in other sections of the country and theoretical designs by western engineers.

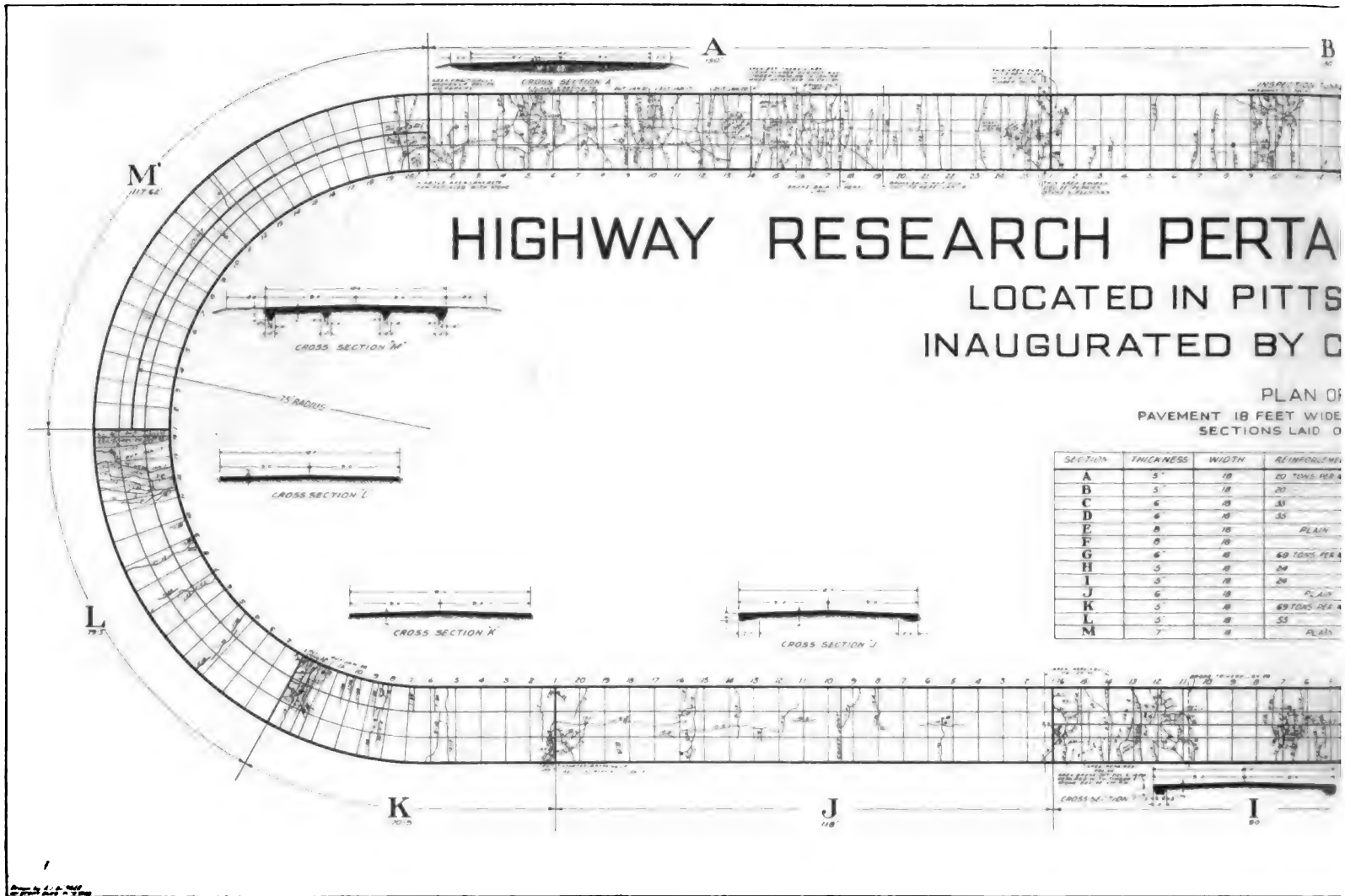
With a well thought out plan of uniformity, a sincere desire for knowledge, and the ideas of some of the leading highway engineers of the West secured, the work of getting results started with the inauguration of traffic on November 9th last. Trucks that were built for the use of the Army during the late war were used for traffic units and they were loaded with pig iron to make such loads as are commonly seen on our highways. As many as 35 trucks were used at a time, and altogether they traveled 61,639 miles, carrying over each section of the highway the same load—3,668,100 tons.

Maintenance Serious Problem

As the tests proceeded disintegration took place in small areas which at first caused little concern, but which as time went on gave increasing trouble until in January the maintenance of the test highway was a serious consideration. Finally, on the evening of January 28th, traffic was suddenly stopped and since then nothing has been done in the way of preparing for a resumption of operations. The trucks and other equipment have been removed from the site of the tests. The exact cause for the stoppage of operations is not known, but it is a certainty that some areas were so destroyed that their usefulness as pavement was ended. Temporary planked timber



Section A (California Highway Commission Standard) at the conclusion of the test.



Crack Record Chart of the Pittsburg Experimental Highway, showing crackage and failure occurring

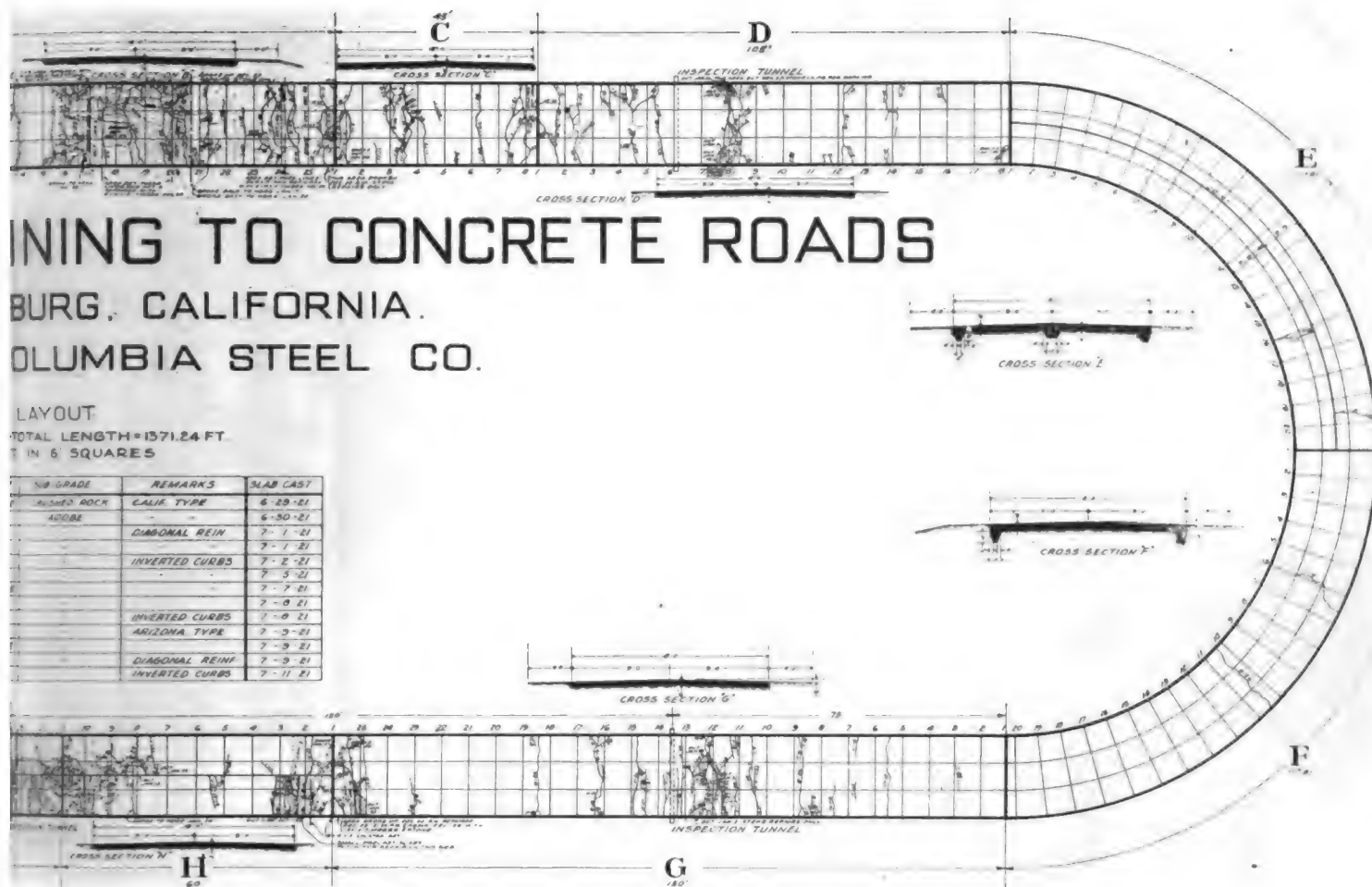
roadways were constructed in place of the concrete pavement at those places, which made possible the continuance of operations. Rumor has it that operations are to be resumed and everyone familiar at all with the need of more definite knowledge of highway

building and its peculiar technicalities hopes that such will be the case. However, the tests so far have been conclusive of some things of the utmost value, and particularly to the people of this State. So far as showing which of the thirteen sections is the best, the

tests are incomplete, but of the reverse they are finished; that is to say, they have shown which sections are least able to withstand the strain of traffic. A glance at the plan accompanying this article will show the condition of each of the thirteen sections on the evening of the day the tests were completed. An analysis of the several sections shows that the three heaviest sections—that is, the ones having the greatest minimum thickness of concrete, have stood up the best of any. These sections are E, F and M, the first two having a minimum thickness of 8 inches and the other of 7 inches. This study also shows that the thinner slabs—the ones of 5-inch thickness—have been the ones least able to stand the traffic. Of the six sections in this class four, A, B, H and I, stand out prominently as failures. The degree of failures of the intermediate sections or the ones of 6-inch minimum thicknesses is between the other groups. All of this indicates beyond doubt that the thicker the concrete itself the more able it is to withstand the destructive agencies of traffic.



What is left of the State Highway Commission's "ultimate road section."



Between November 9 and January 28. Compiled from daily observations made at the test highway.

Reinforcement Considered

An analysis would not be complete unless a consideration was given to the reinforcing steel that was used in the various slabs. There is plenty of evidence to show that the disintegration is as bad where reinforcement is used as where none at all is placed in the pavement. Then again other evidence would indicate that the permanency of thin slabs, if a sufficient quantity of steel were used, would be increased materially. Sections K and L are both 5-inch slabs and are identical with sections A and B, the two State Highway standard sections, except that they have about three times the tonnage of reinforcement steel. Sections K and L stood up very much better than A and B.

The cost of one extra inch in thickness of concrete is about the equivalent of 50 tons of steel reinforcement per mile. Consequently the 5-inch sections of K and L, which have 69 and 55 tons of steel per mile, are somewhat higher in cost than the 6-inch section J, which has no reinforcement. The disintegration in section J is less than in either of the other two sections, in-

dicating that from a standpoint of economy of construction and durability that the thicker unreinforced section is the better. Both sections G and J are 6-inch sections. The disintegration in section G is much more noticeable than in J, and yet it has 69 tons of

steel per mile, while J has none. These evidences and studies indicate that steel reinforcement adds strength to the concrete road slab, but that the same extra cost put into extra thickness of concrete is more effective. In

(Continued on page 36)



The Arizona section is shown between the first and second depressions. This road is 6 inches thick—the type recommended for California by automobile clubs.

In the World of Motordom

"Cowcatchers" for automobile and trucks are the latest. They are designed to protect life, radiator, lamps, steering gear, wheels, axle and springs; and being attached to the latter act as shock absorbers.



This new auto was designed by the famous German aviator and maker of the Rumpier aeroplane. The motor is located in the rear of the machine instead of the front.

One of the powerful motors in one of the new gasoline passenger cars now in operation on the New York, New Haven & Hartford Railway. The entire weight including passengers and crew is 27,000 lbs. The operating cost is eight and a half cents per mile. The car makes from 6 to 10 miles on a gallon of gasoline and will travel 40 miles an hour.

Photos by Underwood & Underwood



New Accessories for the Motorist

Tells Your Gasoline Consumption

The motorist who wishes to know his gasoline consumption in miles per gallon can now purchase a simple instrument which takes its place on the cowl along with the other devices. Like the speedometer it registers continuously, showing the gasoline consumption in miles per gallon for any particular instant. The device consists of a glass slit behind which there is a black ball which moves up as the consumption increases. One edge of the slit is divided into gallons per hour; there-

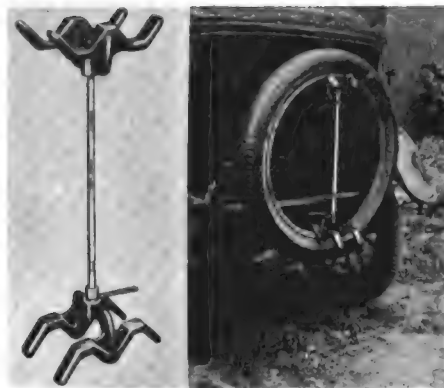
The nut is then replaced on the bolt inside the lock housing and screwed tight. The lock itself is then snapped in place, making the tire and rim theft



proof. The lock housing is finished in glossy black enamel and the lock face is nickel plated, making it attractive, durable, and rust proof. The lock itself is an approved type that has almost unlimited key changes to insure safety. The device is made in several types and hence is adaptable to nearly all cars. There is a special model for Fords, which retails for \$4.00. All other models sell for \$5.00.

New Tire Carrier

An extremely neat, strong and easily operated extra tire carrier has been brought out. It consists of an upper and lower member, which simul-

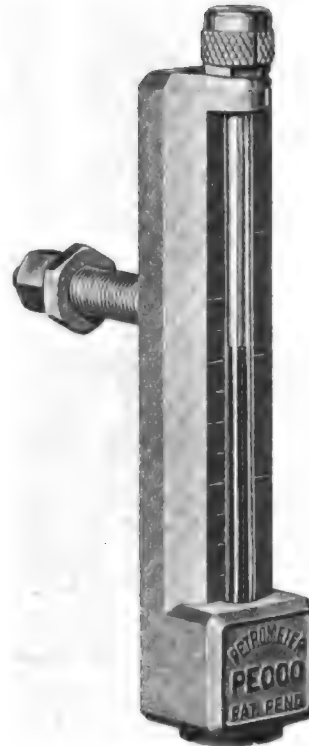


taneously clamps the extra tire to the regular spare tire by turning a vertical rod, by means of a suitable handle. This rod is equipped with left and right threads, so that turning it one way operates the member at either end. The handle may be padlocked in place.

Gasoline Gauge

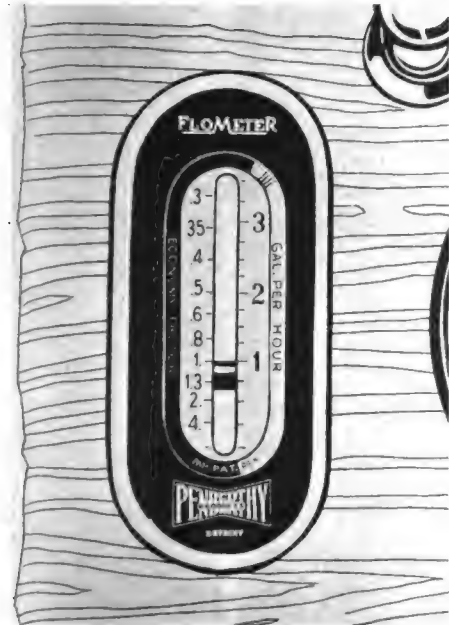
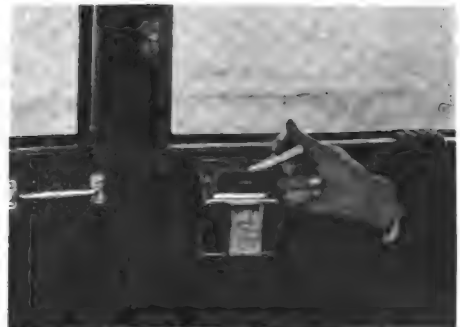
The petrometer is a new gasoline gauge which goes on the instrument board. It indicates the level in the

tank and yet it has no springs or floats or complicated parts. It operates on an entirely new principle and it is said to be absolutely accurate. The price is \$5 and any owner can install it.



Neat Ash Receptacle

Smokers owning closed cars will welcome a new ash receptacle made in various models so that it can be mounted at any point in the closed car. One model is particularly suitable for the instrument board, and another model for the side of the rear compartment. Normally, the ash door is closed, but may be opened by pushing a button. The base is removable for emptying the contents.



fore, if the ball stands at 3 gallons per hour when the car is running 24 miles per hour, the consumption at that instant is at the rate of 8 miles per gallon. The working of the instrument is simplicity itself.

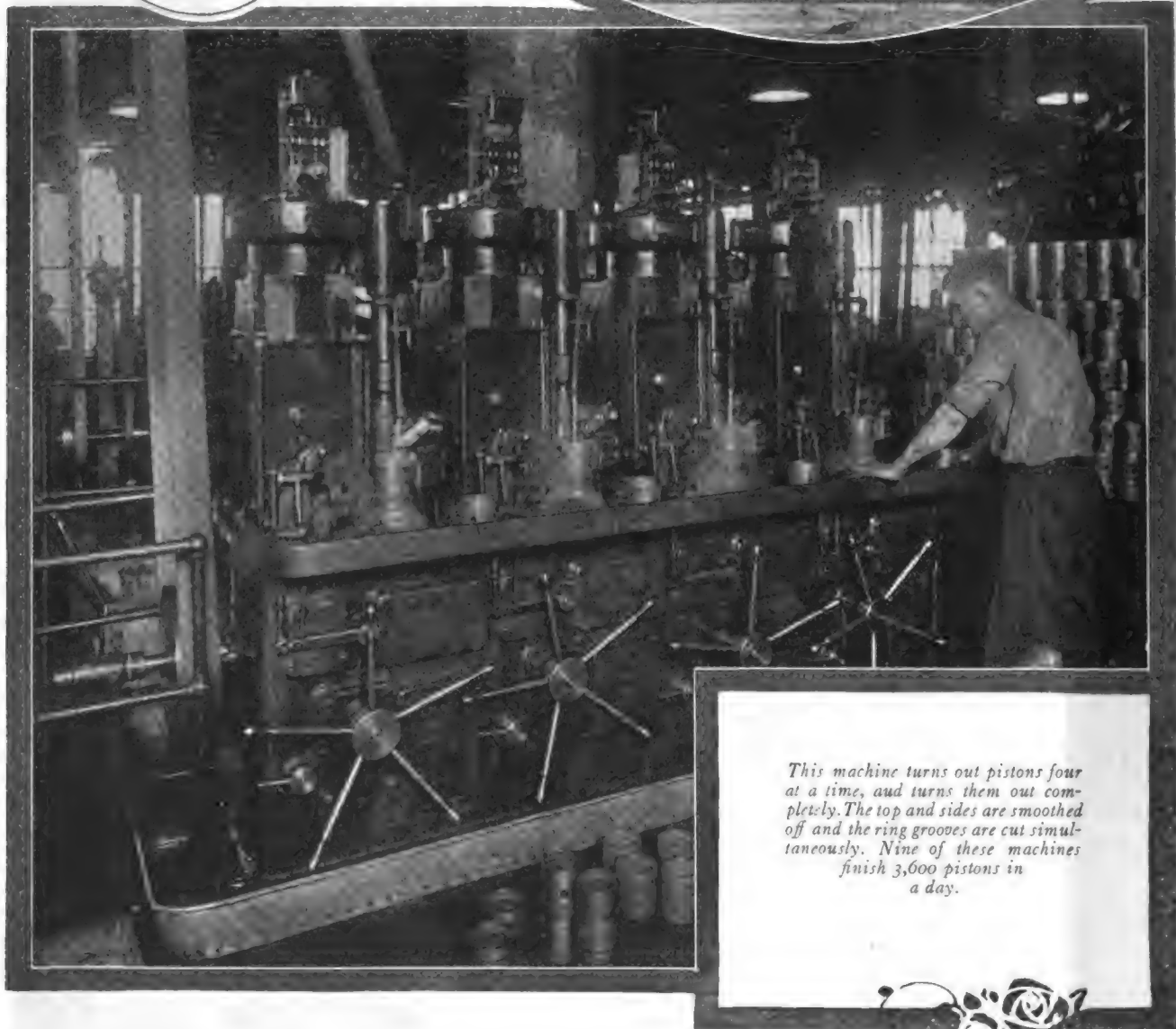
The instrument is so delicate that it will instantly indicate any trouble which may affect the car economy.

Clever Locking Device

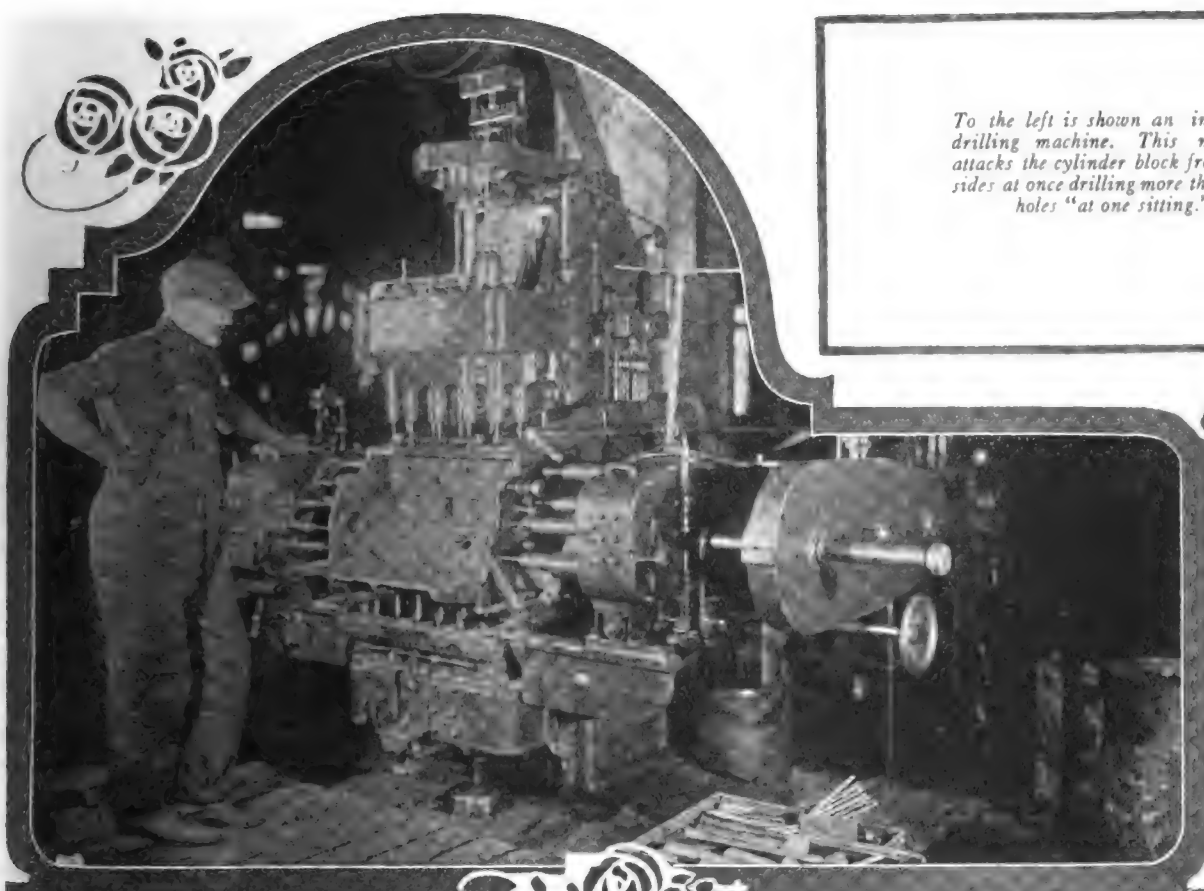
A new spare tire and rim lock that is claimed to effectively foil the spare tire thief has recently been placed on the market in Indianapolis. The new locking device has two simple parts, a barrel-shaped casting of malleable iron about 2 inches in diameter, and a non-pickable dust proof removable lock which fits and revolves in the outer end of the lock housing. The rear end of the casting has a center hole through which the threaded stud, found at the bottom of most tire carriers, is passed.

Why Automobiles Are Cheaper

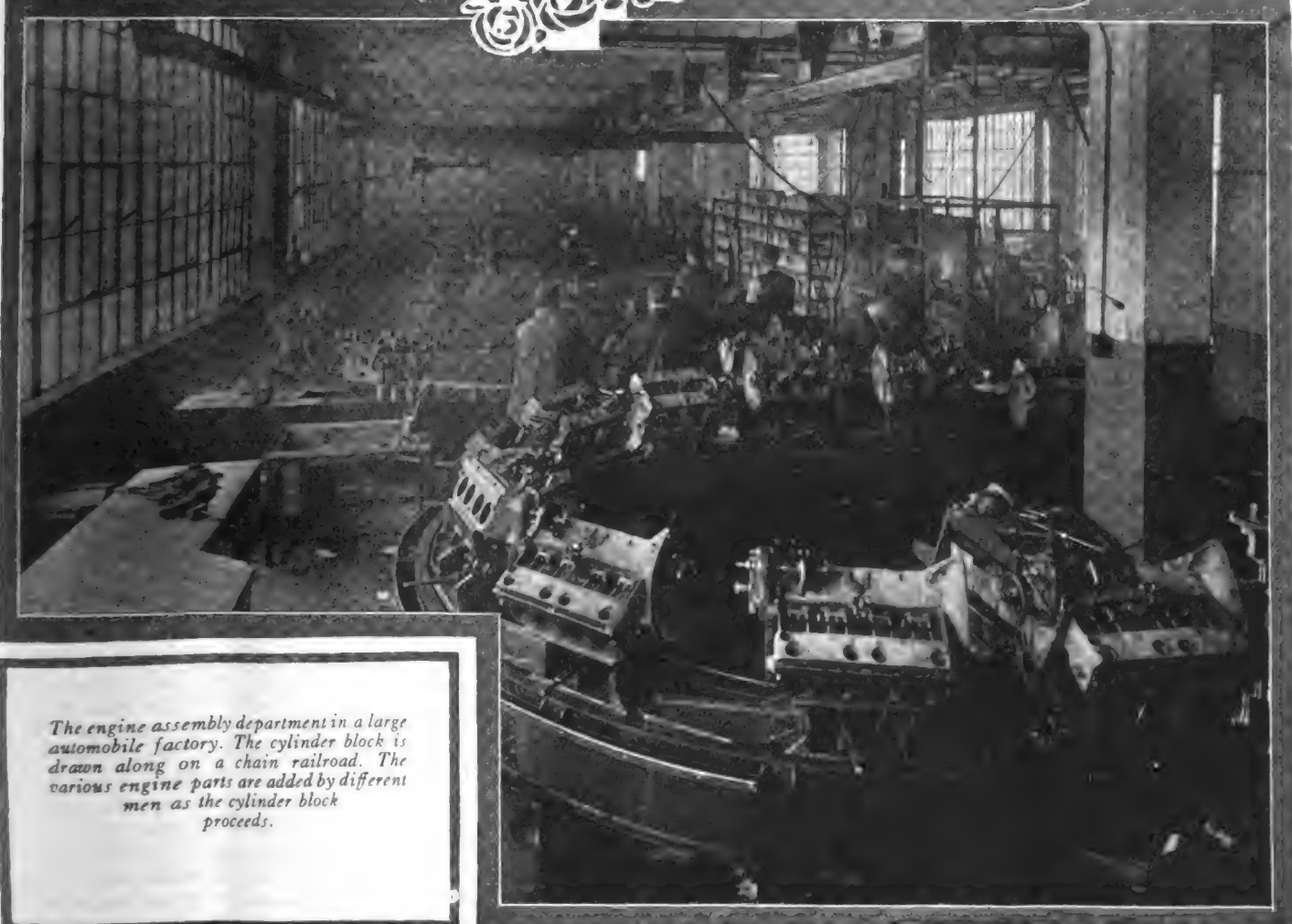
The fact that automobiles are lower in price than any other commodity is explained by still greater efficiency in production. This drill bores 82 holes in a four-cylinder crank case at once, the operation taking less than a minute. This machine takes the place of from 6 to 11 separate tools.



This machine turns out pistons four at a time, and turns them out completely. The top and sides are smoothed off and the ring grooves are cut simultaneously. Nine of these machines finish 3,600 pistons in a day.



To the left is shown an improved drilling machine. This machine attacks the cylinder block from four sides at once drilling more than fifty holes "at one sitting."



The engine assembly department in a large automobile factory. The cylinder block is drawn along on a chain railroad. The various engine parts are added by different men as the cylinder block proceeds.

YOUR CAR'S VACUUM SYSTEM

How It Works and Simple Instructions for Its Care

THE vacuum tank is an automatic device, operated by the suction of the engine, which pumps gasoline from the tank at the rear of the carburetor. By placing the carburetor low and the tank high, fuel will flow by gravity and no pumping mechanism is then required, but there are objections to this arrangement. It is necessary to place the gasoline tank in the cowl or under the front seat. There is hardly room in the cowl for it, and the space under the front seat is wanted as a tool and battery compartment by most car builders. The logical place, then, for the tank is at the rear. If the tank were placed high, gasoline would flow all right on the level but would not flow when the car was ascending steep hills. If the tank is placed under the seat the carburetor must be placed low, and a long intake pipe is a serious disadvantage with present-day fuels. Therefore, to meet the dual requirement of a high set carburetor and a gasoline tank hung low at the rear, the vacuum tank has been almost universally adopted as the most satisfactory pumping mechanism.

The tank consists of an upper and lower chamber. The lower chamber is merely a reservoir from which gasoline flows by gravity to the carburetor. Practically all the mechanism is in the upper chamber. A pipe runs from this chamber to the intake manifold and another pipe to the gasoline tank at the rear. There is also a vent pipe communicating with the atmosphere. When the supply of gasoline is low in the upper chamber, the float is also low, and the valves to the suction and gasoline tank pipes are open while the vent valve is closed. The suction of the engine thus draws fuel from the rear tank into the upper chamber. As this chamber fills, the float rises and closes the valves on suction and feed lines, simultaneously opening the vent valve to atmosphere. This action cuts off the suction and raises the pressure in the upper chamber to atmosphere, when the fuel flows to the lower chamber by gravity through the flap valve. The springs and levers operating the valves are so arranged that the float is always in the extreme upper or lower position, "snapping" from one to the other. The bottom of the tank is formed up and thus makes a sediment trap, which may be drained through the cock at the bottom.

Keep Connections Tight

The first rule in caring for the gasoline system in general and the vacuum tank in particular is to keep all con-

nections tight. The gasoline system should require little attention beyond keeping the system clean. The vent hole in the rear tank should be kept open, and the vacuum tank should be drained of any sediment or water

put the finger over the opening to the carburetor and note whether there is any suction. If so, it indicates that the flap valve is leaking. The engine may be turned over either by the starter or by running it on gasoline poured into the float chamber of the carburetor.

Remove Pipe Plug

If the engine floods or gets too much gasoline when running on the usual adjustment, remove the pipe plug from the top of the tank. If this remedies the trouble it is likely that the float leaks. The car may be run any distance under these circumstances, the process being simply to run with the plug removed until the tank is nearly empty. Then replace the plug and allow the tank to fill up; remove plug and proceed as before. It will be necessary to take the tank apart in order to remove the float.

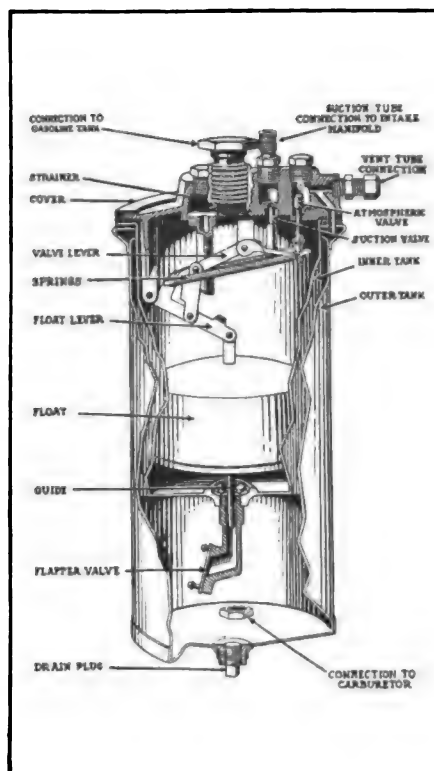
However, before attempting to take the tank to pieces it is wise to make sure the trouble is not elsewhere. All pipes and connections should be clean and tight and there should be no excess of sediment in the screen at the top of the tank. This screen strains the fuel as it enters the vacuum tank from the main gasoline tank. If there is any question as to whether it requires cleaning or not, disconnect the gasoline pipe and screw out the bushing, thus exposing the screen, which may be cleaned by gently scraping with a knife blade.

If after performing the various operations described the tank still fails to function properly, it will be necessary to take it apart. Remove the eight screws along the flange of the top, insert a thin knife blade under the gasket and move it around to free the gasket at all points. In lifting the top out be careful not to stretch the float springs or to strain or harm the mechanism. If the flap valve is leaky it may easily be screwed out and cleaned. When cleaned be sure to get the copper gasket back in place and tight.

Repairing a Leak

If the float has sprung a leak it should be repaired as follows: First unhook the springs, being careful not to stretch them and also to note how they are hooked into the yoke so as to replace them in like manner. Next, dip the float in hot water and note point from which bubbles issue, as this indicates the hole. After the leak has been found punch a small hole in the top of the float and also one in the bottom near the outside edge. These holes will enable you to drain off the

(Continued on page 40)



about once in a thousand miles. If there is no flow a wire should be inserted in the drain cock.

If the vacuum tank is empty it will be necessary to fill it before the engine is started. This may be done by closing the throttle, pulling out the choke and operating the starter for a few turns. Then wait until this fuel has had a chance to flow into the carburetor before attempting to start the engine.

If this operation does not fill the tank it may be that a small piece of sediment has lodged under the flap valve and does not allow it to close. If so, remove the pipe plug in the top of the tank and pour in a little gasoline. In most cases this fuel will not only be sufficient to wash any dirt off of the valve but it will start the engine and keep it going until the tank starts to function.

Even if the chamber is filled full of fuel, it should not leak through the vent, but if it does leak at this point it shows that this valve leaks, and it should be worked in with a screw driver until it holds gasoline.

To test the flap valve for leakage, disconnect the pipe to the carburetor and with the motor turning over slowly



AUTOMOBILE CLUB NEWS

Construction Program Mapped for Victory Transcontinental Highway

Northern California has at last an opportunity of giving its support to a definite and tangible transcontinental highway program, the consummation of which will be of immeasurable benefit in bringing the eastern tourist traffic into that region.

It is a matter of record that of the thousands of eastern tourists reaching Salt Lake City each year a majority express a preference for Northern California but go elsewhere because of poor road conditions. This is to be changed. To do that every community of Northern California will have to lend its full support to the improvement of the particular highway shown above, which the highway commissioners of three States have designated as their choice of a transcontinental road of first importance.

In the past but little progress has been made toward the improvement of a main trunk transcontinental highway into Northern California, chiefly because of the many financial obstacles and the haggling over a choice of routes. The new Federal Aid Road Act of 1921 changed that condition and made possible the realization of the hopes of Northern California communities. That act provided first a method of financial co-operation between the Federal Government and the sparsely settled Western States whereby the Government would pay an increased share of the cost of the necessary improvement. This in general removed the financial obstacles, although isolated sections are still confronted with difficulties of that nature. Plans are under way to rapidly remove those too. The act also provided for the designation by the several States of a system of highways not to exceed 7 per cent of the road mileage of each State to be entirely completed before any new work is undertaken. Of that system three-sevenths is required to be roads of primary importance—they must be interstate in character and form the main arteries of travel.

Our Real National Highways

These "primary roads"—that is what they are termed—are to be our real national highways. The bulk of the Federal money is to be concentrated in their improvement and the specifications are for a high type of roadway. In designating this system of "primary roads," the State highway officials of Utah, Nevada and California were confronted with an important task. The proper development of entire communities and particularly of Northern California depended on their decisions.

No agency possesses more complete information than the State highway departments of conditions pertinent to the selection of these routes, and for that reason the Federal act left the designation to the several States. It is true that the Federal Government's approval to this designation must be secured, but that provision is mainly for the purpose of adjusting connections at State lines.

In accordance with the provisions of this new Act of Congress, and after giving the matter mature considera-

tion with all available information before them, the State highway commissions of Utah and Nevada unhesitatingly named the Victory Highway across Western Utah and Northern Nevada as the "primary road," and the Highway Commission of California designated the Auburn, Sacramento, Stockton route. The route of the Victory Highway has not been determined in California. These designations placed end to end make a most direct, practical and feasible highway from Salt Lake City to San Francisco, and one upon which it is now possible for all of Northern California to lend its support

Differences Speedily Adjusted

Immediately after these designations the California State Automobile Association, through its Good Roads Bureau, suggested a two-day conference in Reno which was attended by State officials of the three States, county officials and others vitally interested in the early improvement of this highway. The purpose of this meeting was to bring all of the officials having to do with this important work together, adjust local controversies and formulate a definite and immediate program of construction. The Nevada Highway News, the official publication of the State Highway Department, in its issue of February 18th, has this to say of the meeting:

"We were able to adjust differences speedily and come to a definite understanding on the entire route in two days, which would probably have otherwise taken weeks."

Every official present was enthusiastic in his statement that while this may not have been the largest road meeting held in the West, it never has been equaled for real constructive work.

H. C. Means, the State highway engineer of Utah, in a lengthy and interesting talk, gave the assurance that his State would concentrate its efforts toward the early completion of the Victory Highway west of Salt Lake City; that while a lack of funds prevented an immediate program of construction, they would keep the road in a high state of maintenance until provision could be made for the State's share of the cost of construction. F. C. Schramm, representing the business interests of Salt Lake City and Utah, stated that they would get the money somehow, and in a very short time, to do the construction work. A definite program was worked out for the road across Nevada involving the expenditure this year of more than one and one-half million dollars. George W. Borden, the State highway engineer, made the statement that about one-half of this work would be advertised as soon as the snow had melted sufficiently for contractors to view the proposed work.

Nevada's Construction Program

The program for Nevada, segregated as to counties, follows:

The Washoe County program includes paving from Reno to a point 2 miles east of Verdi, a gravel-surfaced road from Wadsworth to the east county line, paving through the city of Sparks.

Your summer vacation — plan it now

To the people who live on the Pacific Coast there is no section of the American continent of which they think quite so much. But how much of it do the people of California really know, outside of their own state?

And, yet, to those who own automobiles, how easy it is to know it.

There is no easier way to become acquainted with its scenery, its people and its business opportunities, than by making a tour of Oregon, Washington and British Columbia.

A vacation in the Pacific Northwest, which comprises two states of the union and one province of Canada, may be taken at any time that is convenient, and may be as long or as short as the time that may be spared from business. The entire summer may be spent in this great summer resort region. Every moment will be most delightful and profitable.

On the 25th of August last, the writer met a gentleman and his wife, driving through Rainier National Park, who left San Diego during the first week in May, and were still headed north, with the intention of touring the rest of the state of Washington, and the province of British Columbia, and were enjoying every hour of their trip.

Write for Map or Illustrated Booklet

on the Pacific Northwest
or on motoring, fishing,
golfing, mountaineering
or yachting to the Pacific
Northwest Tourist Association,
Herbert Cuthbert,
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Motor up to Cloudland on High

You may spin along 15,000 miles of scenic highways, 6,000 feet above sea level, above the clouds and 9,000 feet below the summit of snow capped mountains, or through flower carpeted meadows and golden orchards.

You may fish in mountain streams, fresh water lakes and inlets of the sea for trout or salmon, play golf on 38 golf courses with evergreen fairways. Bathe on sea beaches or sail on a thousand miles of inland seas. You may camp in woodland glades or mighty forests or in automobile camps especially provided. Excellent hotels at reasonable rates everywhere.

Hayden Lake
near Spokane—A favorite tourist's
resort in the Inland Empire

America's most wonderful summer playground for the motorist—

THE open road calls you; the majestic scenery of the Pacific Northwest calls you; its trout streams, to be found every few miles along the road; its thirty-eight golf courses; sea beaches; national parks and forest reserves lure you to

**ENJOY YOUR FAVORITE SPORT IN
THE FINEST SUMMER CLIMATE
ON THE CONTINENT**

Bright, cool days with a sound, restful sleep every night,
in the

**Great International Pacific Northwest
Oregon, Washington
and British Columbia**

This summer playground is at your doors. You may take your car any day and drive all the way. There is no other such drive in America. There are excellent hotels at very reasonable rates and camping places everywhere. If you wish further information

Write for free illustrated booklet to any commercial organization in Oregon, Washington or British Columbia, or to Herbert Cuthbert, Secretary, Pacific Northwest Tourist Association, maintained by government funds to give free information, L. C. Smith Bldg., Seattle



A fair catch by a fair motorist in an interesting break in a day's run in the Pacific Northwest—

One of the 58 Golf Courses
in the Pacific Northwest
Colewood Vancouver Island
British Columbia—

[In writing to advertisers please mention MOTOR LAND]

The Pershing County program includes the surfacing of about 10 miles of the recently graded road near Rye Patch. Work is limited in this county, owing to the small amount of county funds available.

The Humboldt County program includes a project from the Pershing County line to Winnemucca, which will have to be surveyed and will therefore not be constructed until late in the year, and also a gravel-surfaced project from the east county line to Stone House. In addition a small amount of work will be done between Golconda and Iron Point, placing permanent structures.

The Lander County program includes widening and surfacing with gravel the project previously graded between Battle Mountain and the west county line and also a small amount of work near Argenta, placing permanent structures.

The Eureka County program includes the construction of project between the west Eureka county line and the north boundary of the White House Ranch.

The Elko County program includes the construction of the project from the west county line to Vivian (the west end of completed Project No. 5), the construction of the project from Elko to Halleck, and a project between Deeth and Wells which is yet to be definitely fixed and surveyed.

The "primary road" in California is to be improved this year according to the statement of George W. Mansfield, State highway commissioner, by the following construction work:

- (1) The paving of the road from Auburn to Colfax.
- (2) The elimination of the heavy Donner grade by the building of a new and much lighter grade.
- (3) The construction of the new Dog Valley grade between Truckee and the Nevada line.

With this heavy program of construction work under way early this year the dream of those who have hoped to get an improved transcontinental highway from the East into Northern California is about to be realized. The Victory Highway has already been signed by the California State Automobile Association to Kansas City. This matter is of such vital importance to all of Northern California, and such hearty co-operation is needed that every individual, civic organization and otherwise interested person should write the highway commission of Utah, the highway department of Nevada, and the Bureau of Public Roads at Washington, D. C., endorsing this action.

C. S. A. A. Committees Named by President Forderer for 1922

The various committees which will direct the destinies of the California State Automobile Association in 1922 have been announced by President George S. Forderer. In addition to the standing committees in existence prior to this year the Board of Directors has created a new committee to be known as the "Public Safety Committee." This committee will direct its efforts toward minimizing automobile accidents and improving traffic conditions.

The committees named follow: Finance Committee: Edwin F. Merry, Chairman; W. S. Clayton, H. R. Basford, M. H. Esberg and Percy E. Towne. Publicity Committee: Percy E. Towne, Chairman; Francis Carr, H. R. Basford, Walter D. Cole and F. W. McKeVitt. Association Activities Committee: W. T. Sesnon, Chairman; M. H. Esberg, D. H. Lafferty, P. J. Walker and Edwin F. Merry. Good Roads Committee: H. J. Brunnier, Chairman; W. S. Clayton, Burton E. Towne, D. H. Lafferty and John R. Graham. Membership Committee: P. J. Walker, Chair-

man, Truman G. Hart, W. T. Sesnon, Wm. T. Jeter and Arthur Hebbbron. Transcontinental Highways Committee: Truman G. Hart, Chairman; F. W. McKeVitt, Francis Carr, Wm. T. Jeter, Arthur Hebbbron. Forestry Committee: Burton E. Towne, Chairman; Thomas Hine, Francis Carr, Frank A. Cressey and John R. Graham. Public Safety Committee: M. H. Esberg, Chairman; John R. Graham, Thomas Hine, Wm. T. Jeter and Truman G. Hart. Legislative Committee: A. H. Breed, Chairman; Percy E. Towne, Burton E. Towne, Walter D. Cole and Frank A. Cressey. Executive Committee: H. R. Basford, Chairman.

Club to Erect 10,000 New Road Signs

Ten thousand new C. S. A. A. yellow and blue road signs will be placed on the roads of California during 1922 under the plans of the Association's Engineering Department, headed by Engineer J. W. Johnson. Forty-three counties have been selected by the Association for new signs this year.

Under the plans of the Association seven counties in which few signs have thus far been erected will be completely signed. These counties are Sutter, Plumas, Mariposa, Tuolumne, Trinity, Del Norte and Sierra. Three trucks will soon take the field to begin the work.

The Association is also soon to begin work on El Camino Real. The existing signs have been taken over by the club and are to be replaced with enamel markers.

New Strip Maps Ready For 1922 Touring Season

The work of preparing detailed strip maps covering all parts of the United States is being rapidly completed by the California State Automobile Association. With the opening of the touring season this year members will be routed to Kansas City over the Victory Transcontinental Highway with the club's own maps. Strip maps covering the route from Los Angeles to Phoenix via Mecca and Blythe, and via Parker and Wickenburg have also been completed.

Permits to Mare Island Navy Yard

Arrangements have just been perfected with Commandant J. S. McKean of the Mare Island Navy Yard whereby the Vallejo district office of the C. S. A. A. may issue permits to automobile tourists to visit and inspect the big naval establishment at Mare Island in their automobiles. Mare Island is connected with Vallejo by a vehicular causeway, which is constantly guarded by sentries, and only those holding permits are permitted to pass.

The Mare Island Navy Yard is the largest establishment of its kind on the western coast, and a visit to it may well be one of the most outstanding features of any tourist trip through Northern California.

Idaho State Automobile Association Joins A. A. A.

The Idaho State Automobile Association is now a member of the American Automobile Association according to an official announcement from Secretary-Treasurer H. W. L. Niemeyer. Affiliation with the A. A. A. means national touring service to all members and the protection of Idaho's interests in national legislative matters.

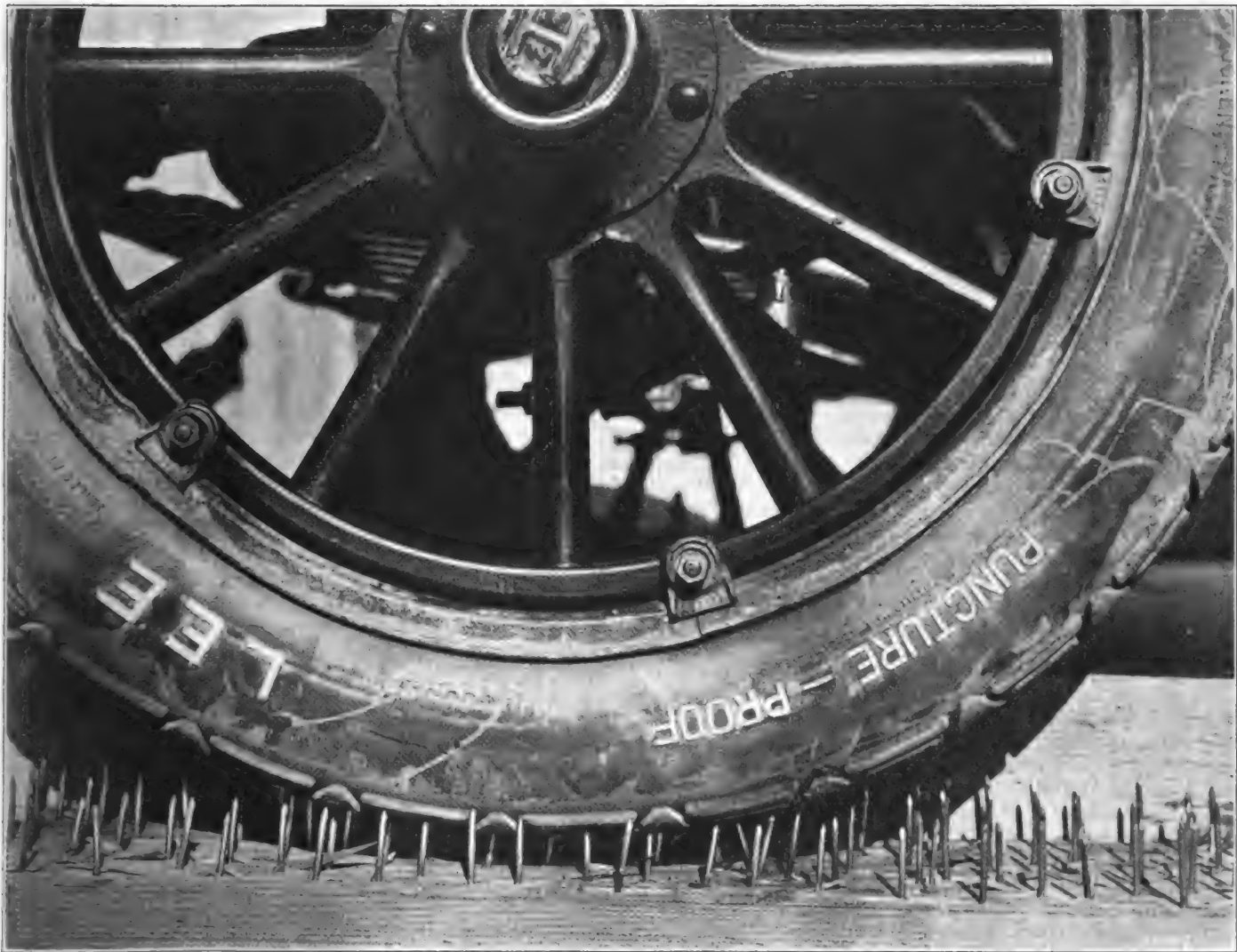
LEE PNEUMATIC TIRES

PUNCTURE PROOF

ARE UNLIKE ANY OTHER TIRES

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Cash refund if they puncture!



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KNOCKS--BENIGNANT AND MALIGNANT

Interpreting the Language of Your Motor Car

By HAROLD F. BLANCHARD

NOT all knocks are dangerous, but to be on the safe side the motorist should know enough about knocks to determine whether the noise is "benignant" or "malignant."

Knocks caused by too great spark advance, heavy carbon deposit, incorrect mixture, too high compression are not especially harmful, but knocks produced by lack of water or oil, loose or broken parts, or missing should be regarded most seriously and remedial steps taken at the earliest possible moment.

Knocks which give forth a powerful sound are usually likely to cause more damage than light knocks.

Running with the spark advanced too far is probably the most common cause of knocking. Under these circumstances the knock will appear when the engine is running rather slowly with throttle open. It will disappear when the throttle is closed or when the speed of the engine increases. Closing the throttle stops the knock because this act reduces the compression, and thus retards the rate of burning to such an extent that the pressure peak of the feeble explosion is not reached until after the piston has started down on its working stroke. On the other hand, when the engine is running fast enough the knock disappears because at high speeds the movement of the piston is so rapid that the pressure peak is not reached until after the piston has passed top dead center, in spite of the fact that ignition of the charge actually began long before the piston reached top dead center.

The Spark Knock

To eliminate the spark knock, try retarding the spark. If this does no good, examine the distributor mechanism while the spark lever is moved back and forth. If the distributor does not move accordingly it shows that there is slippage at some point in the linkage. Correction of the fault should remedy the knock. If the engine knocks even with the spark properly retarded it may indicate that the spark is timed too far in advance. Remember that for correct timing the breaker points should be just ready to break when the pistons are on dead center, with spark lever retarded. Unless you understand how to change the spark setting it is best to have a repairman do this work.

A spark knock may be very powerful, sounding as though there were a corps of blacksmiths inside the engine with heavy sledge hammers, walloping each piston head as it starts on its explosion stroke. It is an extremely me-

tallic knock sounding exactly like a hammer blow. A similar knock is produced by carbon, a weak mixture, or compression that is too high; in fact to most ears the sounds are identical.

Therefore when a noise like a spark knock is heard, the first thing to do is to retard the spark and thus determine whether this is the cause or not. If the noise still persists it is good policy to assume that it is a carbon knock, especially if the engine has run a considerable distance since the carbon was removed. Remove the spark plugs and if they are badly sooted and there seems to be quite a deposit of carbon in the cylinders, it is likely that carbon is the cause. If in addition the compression is weak and the valves leak, it is quite certain that here lies the fault. Here it should be explained that a missing engine frequently causes a powerful knock due to the fact that the irregularity of the explosions throws the whole mechanism out of balance. This is true whether the cause is a spark plug or a leaky valve, and even if the valves do not leak enough to cause missing, they may produce sufficient irregularity in the engine operation to give rise to a knock. Small leakage will produce a noise that is perhaps better described as a churning sound.

That Churning Noise

Therefore the carbon knock may be accompanied by a churning noise if valve leakage is small, and as valve leakage increases the carbon knock may grow less distinct due to loss of compression past the valves. But as the carbon knock decreases in intensity, the knock due to the varying force of the explosions caused by the leakage past the valves grows. This noise, while it may become a clear metallic knock when one cylinder completely lacks compression, is usually not so definite as the spark knock because it is made up of a variety of noises. The severe irregularity produced by a missing engine produces a noise that is a total of all the little noises which occur wherever there is play in the engine parts. A missing knock is more likely to be caused by a leaky valve than a defective plug.

A carbon knock will be accompanied by loss of power, and if the deposit is very heavy the engine may run for several revolutions after the ignition is turned off. Overheating may also be produced by an excess of carbon, although this trouble is more infrequent than often supposed.

A carbon knock may occur in an engine which has just had the carbon

removed, if, by chance, the job was not a thorough one. Even a very small patch of carbon on the cylinder wall or piston head may provide a nucleus for carbon to collect very rapidly, and, of course, as soon as this little patch is large enough to become incandescent it causes a knock.

Some cars will knock outrageously if the mixture is too weak. The knock increases in ferocity as the speed of the engine rises and is worse on low gear than high gear. Its cause has never been satisfactorily explained, although it is known that the mixture which burns with maximum rapidity is not the mixture which gives the most powerful explosion but one that is somewhat weaker. On this basis it is possible that a weak mixture which knocks is proportioned to give the most rapid explosion. This view still agrees with the fact that a very weak mixture burns so slowly that it may still be afire when the intake valve opens to permit the inspiration of a new charge, the residual flame in the cylinder igniting the new mixture and thus producing a backfire. Such a mixture, of course, is very weak. As the strength of the mixture is decreased from the proportion which gives maximum burning speed, the speed is reduced until it becomes slow enough to produce a backfire. Still further reduction in the strength of the charge will bring the combustion rate to zero—in other words it will be too weak to burn.

However, when all is said, this explanation is hardly sufficient to explain the tremendous knocking that some weak mixtures generate, therefore it is suggested that the cause may be due to "detonation." The mixture proportions may be such that when the spark occurs the mixture does not burn but explodes as instantaneously as dynamite itself. Detonation does explain some cylinder knocks, and perhaps it is also the cause of this one.

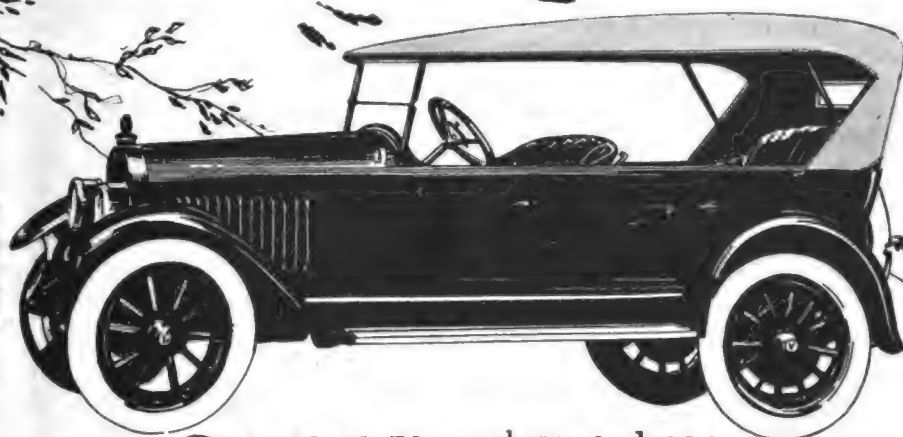
The remedy for a weak mixture knock is to increase the richness of the mixture. If the carburetor is a non-adjustable type it is likely that the jets are clogged. If the mixture does not disappear when the jets are cleaned, the carburetor adjusted, or both, then see that gasoline is flowing to the carburetor in sufficient quantity. The line may be clogged or the vacuum system may not be functioning properly.

Lean Mixture Results

A lean mixture knock sounds exactly like a spark knock but its intensity is likely to be greater, and at high engine

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speeds it is possible that the engine may sound as though everything in it were loose and that it would fall apart in the next hundred yards.

It is frequently stated that a rich mixture will also cause a knock. And in fact, most people in canvassing the subject will mention a rich mixture as a cause and will not mention a lean mixture. As far as the writer is concerned he has come across several cases of lean mixture knocks but has never experienced a rich mixture knock. He has driven numerous cars with too rich a mixture and has deliberately tried to produce a rich mixture knock in several different machines without success. As a result of this experience he has concluded that it is possible that a few machines built today may produce such a knock but that the average car will not do so. Also it is his belief that rich mixture knocks were limited to the early days of motoring when high test gasoline was in universal use. Rich mixture knocks, he believes, are still talked of because they were common at that time. The writer's view may not be correct, but it is offered as his experience.

A knock caused by too high a compression pressure is identical in sound to the others described and is evident when the throttle is wide open and the engine running slowly. The remedy is to place a gasket say a quarter of an inch thick between the cylinders and the crank case. The gasket may be made of fibre and is a feasible method if the valves may be adjusted to the raised cylinder block. Another method is to shorten the connecting rods or put in pistons with the distance between piston top and wrist pin reduced. The simplest method and one that is guaranteed to be satisfactory is to limit the opening of the throttle. A throttle stop limiting the opening should be installed and it should be adjusted so that the engine will not knock even when it is run slowly with throttle wide open. In explanation it may be said that the throttle is nothing more than a device for varying the compression in the cylinder from maximum to minimum. When the throttle is closed the compression is very low and when it is wide open the compression is very high. Therefore if its opening is limited just enough to reduce the compression sufficiently to eliminate the knock, exactly the same result is obtained as when a more complicated means of elimination is used. Inasmuch as the higher compression will give more power it is suggested that motors suffering from over-compression be provided with a throttle opening stop which may be removed when the engine is running fast, as the knock

is not likely to be heard then, while the increased power will be welcome.

Malignant Knocks

While the knocks so far described make considerable noise they are not likely to harm the engine to any extent, but knocks caused by loose parts should be treated with the greatest of respect.

If a connecting rod suddenly sets up a tremendous hammering without any warning at all it is almost certain that the bearing has melted out due to lack of oil. To drive the car even another foot is likely to result in the connecting rod breaking loose from the crank shaft and punching a hole through the crank case, and whether this happens or not the crank shaft is likely to be bent unless the engine is shut off at the earliest possible moment.

A sudden, tremendous pounding under the hood is usually a connecting rod, although it may be a main bearing or something else gone wrong. But the likelihood is that it is a connecting rod bearing, and almost invariably the cause will be found to be a failure of lubrication. The lack of oil may be due to such a small but important thing as failure to fill the oil reservoir; and then again the pump may break down or become clogged with sediment; finally the whole lubrication system may be in perfect order except for the oil lead running to the connecting rod bearing which failed.

If a knocking noise develops gradually it may be caused by legitimate wear in a connecting rod or main bearing. A main bearing knock is more powerful than a connecting rod knock. When the knock is slight it will usually make itself heard when the engine is running with throttle closed or when the engine is decelerating but will not be heard when the throttle is open. It is permissible to run the engine under these circumstances as long as the noise does not become too loud. If the reduction of oil to this bearing is gradual due to diminishing oil supply, gradual pump failure, etc., the looseness of the bearing and the force of the knock will gradually increase over a distance of several miles. If the trouble is remedied before the bearing becomes very loose it is likely that scraping and adjustment of the bearing will be sufficient. On the other hand if it is allowed to become very loose a new bearing may be required.

Low oil may also cause a knock due to dry piston surfaces.

Cooling System Failure

Failure of the cooling system to function may produce a variety of knocks. If there is any carbon at all in the engine it may become incandescent as the temperature of the engine increases; and as soon as this happens a

knock will occur and it will sound just the same as a carbon knock produced by incandescent carbon in a cylinder that has an excess of it. Obviously the more carbon there is in the cylinders the sooner an engine will knock when the cooling system fails. Also, overheating produced artificially, as by running with retarded spark, will cause knocking quicker in an engine loaded with carbon than in an engine containing very little.

Knocks due to low water may also be due to overheated engine parts, parts so hot that oil vaporizes and leaves them dry, and if the overheating causes valves to stick even momentarily missing will occur and this will also cause the engine to knock.

An engine badly in need of oil or water will show a marked reduction in power development.

Worn timing gears or timing gear chains requiring adjustment or replacement will hum rather than knock. Longitudinal play in the cam shaft may produce a shucking sound which may be classed as a knock. Loose cam shaft bearings, loose wrist pins, worn pistons and broken piston rings will cause knocks. The noise a loose piston makes is usually described as a slap. As the engine increases in age the cylinders tend to wear oval. As the piston moves up and down the combination of forces acting on it tend to throw it first to one side and then to the other. On the compression stroke, for example, it is pushed to one side. Usually the explosion occurs before top dead center is reached, so that when the piston starts down on the power stroke the changing angularity of the connecting rod combined with the tremendous total pressure of the gases just exploded combine to throw the piston against the opposite wall. Thus is a piston slap produced.

Look for Broken Parts

Broken piston rings, wrist pin knocks and cam shaft knocks are not very common, but they should be kept in mind. As for cam shaft shucking, some cars are provided with an adjustment to cure this trouble and others require that the cam shaft bearings be adjusted or replaced.

Minor engine noises are caused by loose fan bearings, loose water pump coupling, carbon on a valve seat, push rods with too great clearance, worn push rods and guides and worn rocker arm bushings. Carbon on a valve seat may be eliminated by grinding, but a simpler method which is usually effective is to increase the push rod clearance to an eighth of an inch or more and thus let the valve hammer on its seat for a day or so until the carbon is pounded off. Worn and noisy push rods and push rod guides are best cured by

(Continued on page 36)



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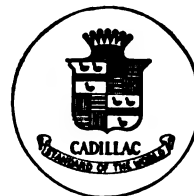
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The metal molybdenum has been known for a long time, but it is only recently that a sufficient supply has been found to enable its application commercially. And most fortunately that supply is not only ample but it is located in the United States. Near Climax, Colorado, an enormous mountain of molybdenite (molybdenum sulphide) has been discovered.

Briefly molybdenum steel can be described as tougher than other alloy steels, and combined with this important advantage is the fact that it is infinitely easier to work. It can be machined, forged, ground and otherwise fabricated with the greatest readiness, in sharp contrast to some of the best alloy steels heretofore produced. A high-grade chrome nickel steel is a good example. It is difficult to excel its hardness, strength or toughness, but it is so difficult to work it that it proves a most expensive material.

Less Material Required

The use of molybdenum means that less material is required to build parts of the same strength. Crank shafts, connecting rods, frame, springs, propeller shaft, axles and various other components may be made lighter because the material is stronger, and this is making it possible to build lighter, more economical automobiles.

Molybdenum is derived from the Greek work molybdos, which means lead, and in Pliny's work molybdaena was a term applied to various materials containing lead. In the eighteenth century the usage of the word was contracted to embrace graphite and molybdenite only, which resemble each other in color, luster and hardness and were then thought to be the same. But in 1778 it was proved that molybdenite was not graphite, and two years later a chemist succeeded in isolating pure molybdenum.

The metal resembles platinum in general physical appearance, although it is darker and possesses a peculiar luster. It is nine times as heavy as water and melts at about 4,500 degrees Fahrenheit. Despite its high melting point it alloys readily with iron, at a temperature of little more than half its melting point.

History and the development of civilization are clearly marked off into periods, beginning with the stone age, then the bronze age, the iron age, the steel age, and more recently the alloy steel age. And the use of molybdenum comes as a crowning achievement of the alloy steel age. The human race made a great discovery in steel, when it learned that by alloying carbon with iron a much harder, stronger product resulted and that the new material would take a cutting edge and keep it. Within the last century it has been learned that various metals added in small proportions to carbon steel would magnify various properties that the carbon steel possessed. The addition of one metal in the right amount would give toughness, another high elasticity, a third extreme hardness and so on. And the addition of molybdenum to these alloys still further enhances their useful qualities.

Ample Quantity Available

There are only five alloying elements of any practical use in the making of steel for automobiles and they are: Chromium, nickel, vanadium, tungsten, and molybdenum. Three of these, chromium, nickel and vanadium, must be imported, there being no deposits in this country, and the fourth, tungsten, while mined in this country will soon have to be imported, as native supplies are nearly exhausted. Of the five, therefore, molybdenum is the only alloy that the United States possesses in any amount, and the fact that it has an ample quantity is a splendid thing for the security of the country in general and the steel industry in particular.

Of the other alloys almost all nickel is supplied by Canada. Vanadium is imported from the Peruvian Andes. Although the United States uses more of this material than the rest of the world combined, it is compelled to go to South America for it. Peru possesses 90 per cent of the known supply.

Tungsten deposits in the United States will last only about five years more at the present rate of production.

When several Western States exhaust their veins this valuable material must come to American steel mills from abroad, principally from China, Japan and certain parts of the British Empire.

The enormous hill of molybdenum in Colorado is not molybdenum in its pure state but molybdenite, which occurs in flakes of almost microscopic size scattered through the rock.

This wonderful supply of molybdenum was discovered and put to use during the war, and much impetus was given to the development of molybdenum alloys because of the war. Fighting tanks, gun shields, helmets, required light armor to stop high velocity bullets. Airplanes, trucks, tractors, needed steel for vital parts subjected to more than ordinary wear and tear. To meet these demands, a steel possessing higher physical properties was urgently needed and molybdenum met the call. For example, in the production of Liberty motors molybdenum chrome nickel crank shafts and connecting rods were recognized as superior to chrome nickel or chrome vanadium steels.

Protected War Tanks

The new alloy steel proved so satisfactory that the Government at once decided to use molybdenum steel in the construction of armor plate for tanks. Before the end of the war, the baby tanks made in America were protected by molybdenum steel, making them lighter and easier to handle and at the same time increased their resistance to enemy bullets.

And then another discovery was made. Speed and still more speed in production was the cry, and it was found that molybdenum steels could be machined much more quickly and easily than others, that they were adaptable to more varied uses and could be worked with greater accuracy.

The scope of application of molybdenum steels appears wider than that of any other steel alloy, although the greater portion of molybdenum steel manufactured to date has been used in automotive forgings and pressed steel parts. Yet its excellent properties are beginning to be employed in a variety of other parts such as railroad forgings and track bolts, armor plate, air flasks, agricultural implements, shovels, machinery forgings, piston rods and various edge tools.

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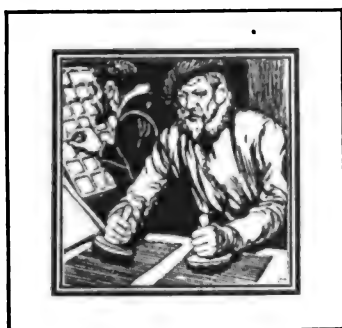
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MARIN COUNTY--THE LAND OF TAMAL

(Continued from page 14)

shady lanes and picturesque wooded slopes, with now and then a picture of the open sea framed by the circling branches of the wind torn oaks.

In the northwest portion of the county lie Drake's Bay, the first known port of California history, and Point Reyes, made famous in the annals of Pacific coast discovery, and a trip to this district includes a visit to Inverness and Tomales Bay.

The Nicasio Valley is reached through San Anselmo and Lagunitas. This is the district of the largest of the Indian tribes of Marin County, and the road winds about the hills through canyons where every variety of fern may be found. It is a favorite tramping ground for the angler, and many a limit catch is reported from the streams that wind down from the heights.

Chessboard Effect

If you have ever visualized the scenes of that classic of childhood, Lewis Carroll's "Alice Through the Looking Glass," you will appreciate the prospect that lies before you from the hills that lie about Nicasio. Orchards in the distance with here and there a little stream alive in the springtime with the first anglers of the season; fruit trees like green pawns on the chessboard of meadow and bare ground; towering redwood and pine to play the roles of white queen and red; quaint little homes, the castles of the hill country; and the knights—the motor cars that zigzag across the horizon on the line of the shining highway "like bandersnatches," in the vernacular of the red queen.

And there are no "jabberwocks" with "jaws that bite and claws that scratch." They disappeared in the long ago when the pathfinder Fremont peacefully conquered the Indian tribes in this same little valley and when Sir Francis Drake, captain general and freebooter, captain of the Golden Hinde, made his quiet conquest of the Marin shore by hobnobbing with the redskins who came to greet him "the white chief from over the sea."

The live folk of the thickets peer out curiously as the car rolls by. On

down through the San Lucas Valley you will find a fairyland of delight. Almost the entire route of the highway is lined with fern, maidenhair and bracken, and the wall of the hill weeps all summer long to the joy of the densely packed growth which garbs its naked side.

You pass through a forest of redwood—cool, shady aisles, and the air is redolent of that strange incense of the wild than which no perfume is sweeter or more stimulating to the memory. It is the odor of ballad lore; it is reminiscent of Robin Hood and Maid Marian and the bluff old sheriff of Nottingham; it recalls Touchstone and the melancholy Jacques and Orlando and Rosalind and Robin Goodfellow and a host of other phantoms more real to us than their counterparts in the pomp of life itself. It is the essence of the springtime; it is the call of the out of doors.

A Delicious Morsel

The whole of Marin County is a delicious morsel to the eye when the springtime brings its colorful display. Motor over its highways and breathe the fragrance of its blossoms and gather your bouquets of iris and mallow and buttercups and daisy and lupin and poppy that carpet the hills and border the highways. Enjoy a picnic lunch in the shadow of the redwoods and drink of its purling streams as they ripple through the tangle of greenery from the depths of the canyons.

The harbor of Tiburon lies east of Richardson's Bay and northeast of Sausalito. Near it is the picturesque site of the state prison, San Quentin. Here was the ground over which the white man and the Indian battled in the early days of California. The "San" part of San Quentin, as in the case of San Rafael, is through a mistaken impression of the source of the nomenclature. The Indian tribes engaged in battle with the white men were under the leadership of Quintin, who was a sub-chief under Marin. The early settlers of the district changed the name from the Indian of Quintin to the French "Quentin" and prefixed the "San."

North of San Quentin stretches the

beautiful bay of San Pedro, into which the Sacramento River pours its turbulent flood.

In the early literature of California one finds abundant mention of the work of Daniel O'Connell. There is in Marin County near the town of Sausalito an "O'Connell Glen" which was once the home of the poet. Here it was that he died in 1899 and there is now a monument to his memory in the form of a granite seat, 15 feet in length, placed on the bank above the roadway. On the back of the seat are inscribed the lines of the sonnet he wrote shortly before his death:

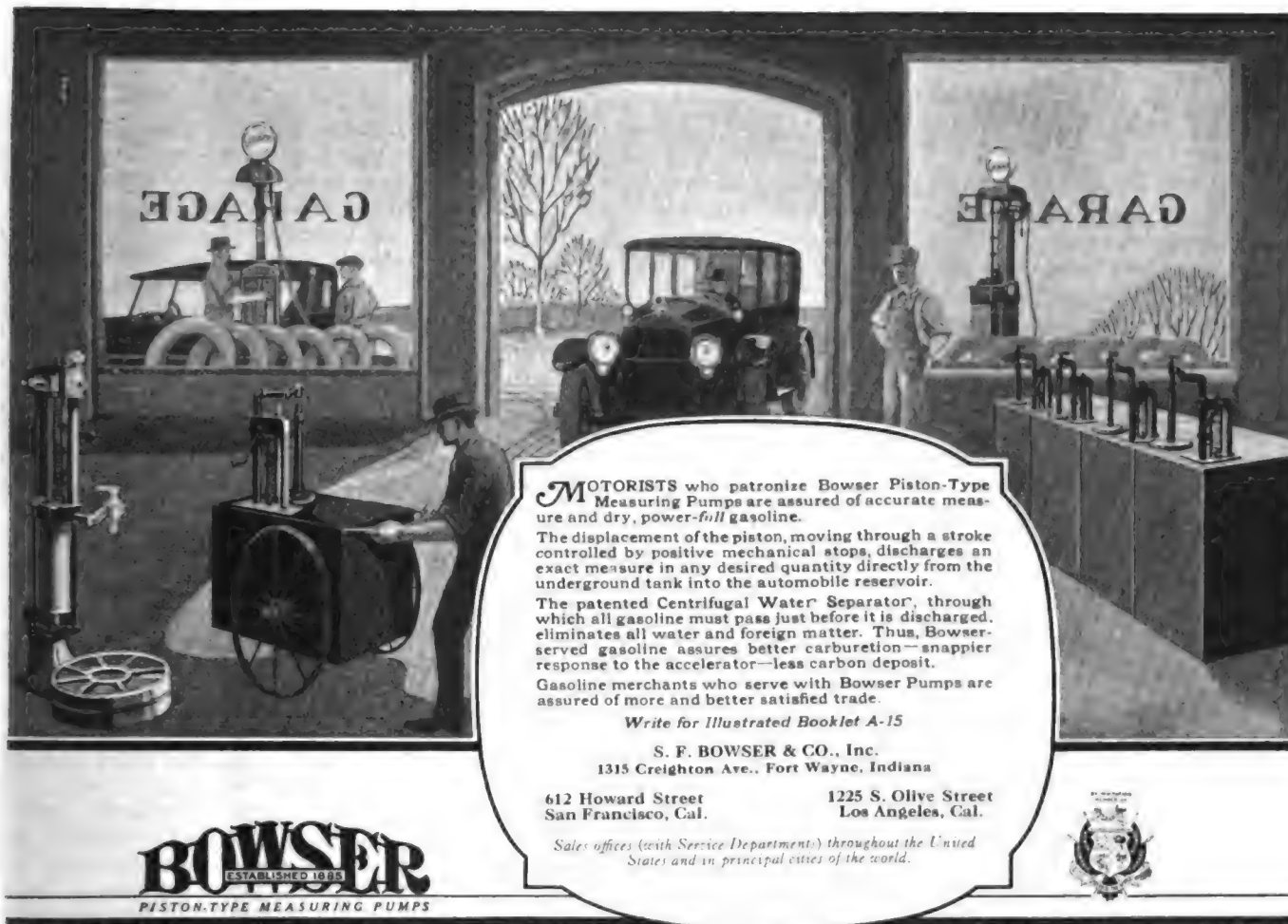
"I have a castle of silence, flanked by a lofty keep,
And across the drawbridge lieth the lovely chamber of sleep;
Its walls are draped in legends woven in threads of gold,
Legends beloved in dreamland, in the tranquil days of old."

The view from the memorial stone is a lovely one. To the left is Angel Island reflected in the clear waters of the bay. Beyond are the Berkeley hills and Mt. Diablo looming in the distant background. Directly before you is the white outline of Alcatraz and over to the right can be seen the city of San Francisco resting like the Eternal City on the bosom of the hills.

If you are there at sundown you may have the opportunity to revivify the wonderful vision of the moon rising over the bay, which has well been described in these lines of Reese:

"A touch of night on the hill tops gray;
A dusky hush on the quivering bay;
A calm moon mountain the silent east
Like a slave the Day-God has released;
Small scattered clouds
That seemed to wait
Like sheets of fire
O'er the Golden Gate.
And under Bonita, growing dim,
With a seeming pause on the ocean's rim
Like a weary lab'rer sinks the sun
To the booming crash of the sunset gun.
All over the long slopes grown with green,
With the white tents scattering in between,
The flickering campfire starts to glow
In the groves of the far Presidio;
While the solemn chord
Of the evening hymn
Rolls over the bay
Through the twilight dim.
As the flag comes down to an anthem grand,
The brave, old song of our native land,
And Angel Isle when the song is done
Booms out 'Amen' with its sunset gun."





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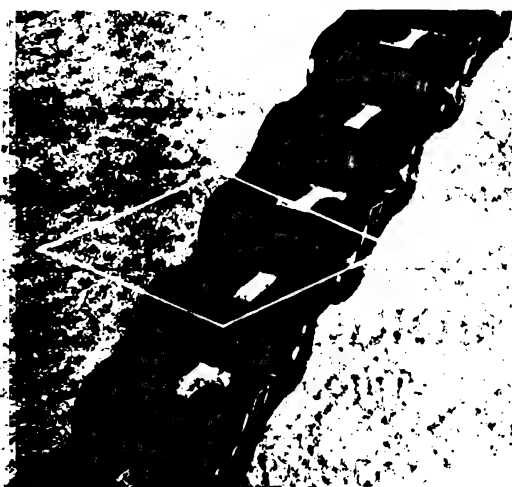
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KNOCKS---BENIGNANT AND MALIGNANT

(Continued from page 30)

replacement. Noisy rocker arms may be cured by rebushing.

A loose flywheel and a loose motor arm have been known to cause a loud and mysterious knocking noise.

There are several parts around the front of the car that are likely to develop rattles that may at first thought be classed as engine knocks. Under this head may come a loose fender, loose lamp or lamp bracket, loose radiator or hood and loose windshield.

Loose clutch parts may knock and any noise coming from this section of

the chassis should be thoroughly investigated without delay.

A transmission too full of grease may hum, but any knock which proceeds from the transmission is likely caused by a broken gear tooth or a bearing with a missing ball or broken roller. A moment's inspection should reveal the trouble.

Lack of lubrication may cause a knock in the universal, although it may also produce a squeak. A knock here is more likely to be caused by excessive wear, and a knocking universal is a certain threat that the car will have to

be towed home the day that it breaks. A knocking in the rear axle is most likely to be caused by a tooth broken out of pinion or ring gear.

A knock in the chassis when the throttle is opened or closed when the clutch is in may be due to play at many points. It may be a worn universal, worn pinion or ring gear bearings, loose ring gear, worn axle splines or worn driving flanges.

A loose rim produces a sound that may be best described as a crunching knock. Usually the cure is to tighten the nuts holding the rim to the wheel.

THE PITTSBURG HIGHWAY TEST

(Continued from page 17)

other words, these tests indicate, even at the present low prices of steel, that it is more economical to place the same investment in thick concrete rather than in thin heavily reinforced slabs.

Probably the most startling comparison that can be made of the various road slabs is between sections A and B on the one hand and on the other section J. Sections A and B are the 5-inch reinforced California standard sections, and it is no stretch of the imagination to call them total failures in that at the end of the tests so much of the pavement had given way that extensive planked roadways had to be substituted. Approximately one-fifth

of each of these sections had entirely disappeared and most of the balance appeared in such an unhealthy condition that it was only a question of a very short time until total disintegration would affect it. Each day increased materially the area of failure.

Section J, the Arizona section, on the other hand was still supporting the traffic with but little evidence of failure. This section is the 6-inch plain concrete section and most nearly approximates the recommendations made by the two automobile clubs in their recent investigation of the State Highway system as the minimum thickness and type of pave-

ment that should be laid on the main trunk lines of the State Highway system. It is possible that sections A and B would wear out twice before section J would be entirely gone, at least there is nothing to indicate otherwise. The cost of these types of pavement slabs is about the same, being in the ratio of about \$28,200 per mile to \$31,770 in favor of the weaker section.

Altogether the tests have been conclusive of several things, but they have shown more forcibly than ever the need of more thorough investigations of types of roadway to meet the traffic demands of California before millions more of money is spent in the improvement of our thoroughfares.



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ONE BILLION FOR HIGHWAYS

Wherein the Motorist's Fair Share Is Analyzed by an Expert

By **HARRY MEIXELL**

Secretary Motor Vehicle Conference Committee, National Automobile Chamber of Commerce

ONE billion dollars will be spent on highways during the coming year—such is the estimated total of Federal, State, county, and municipal funds.

How much of this should the motorist pay?—such is the question which confronts every car owner and legislator.

Except for some of the funds for city streets this great outlay has resulted from the insistent demands of ten million motorists for a wide flung network of stronger and better highways.

But how much of the population benefits from the roads? Is it the motorist alone? Before discussing this point let us see how much of the highway bill the motor vehicle owner already pays.

The latest figures of motor vehicle taxes available on the subject are those which cover the year 1920. They follow:

Motor Vehicle Taxes

FEDERAL:

1 Passenger car excise taxes.....	\$ 83,600,294
2 Commercial vehicle excise taxes.....	15,160,456
3 Parts, accessories, tires, excise taxes.....	49,960,128
	\$148,720,878

STATE:

1 Registration and license fees.....	\$ 102,000,000
2 Personal property taxes.....	50,030,000
3 Miscellaneous taxes (motor fuel taxes, motor transportation franchise taxes, mileage taxes, business taxes on manufacturers and dealers).....	5,000,000
	\$157,000,000

MUNICIPAL:

1 Registration and license fees.....	\$ 1,000,000
2 Miscellaneous taxes.....	10,000,000
	\$11,000,000

Grand Total.....**\$316,720,878**

These figures are for 1920. Registrations for 1922 are likely to show a 25 per cent gain over 1920. The tax rate on motor vehicles as personal property has everywhere had an upward tendency. Eleven new States, making a total of fifteen, now have a gasoline tax. Allowing for a decrease in the Federal excise taxes, due to lower production and lower prices than in 1920, the motorists' total tax bill will still be in the neighborhood of \$350,000,000.

Motor vehicles will, therefore, contribute in the form of special fees fully 35 cents on every \$1.00.

But will this highway financing benefit the motor vehicle specially or exclusively? The answer to this question, coupled with a quantitative and qualitative estimate of this special and exclusive benefit, can alone enable a determination of what portion of the highway financing dollar the motor vehicle should pay.

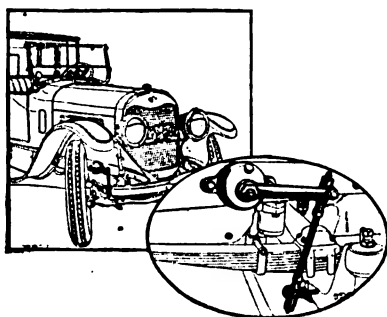
Who Benefits from the Highway

A man living on the outskirts of a

Hoo-Dye

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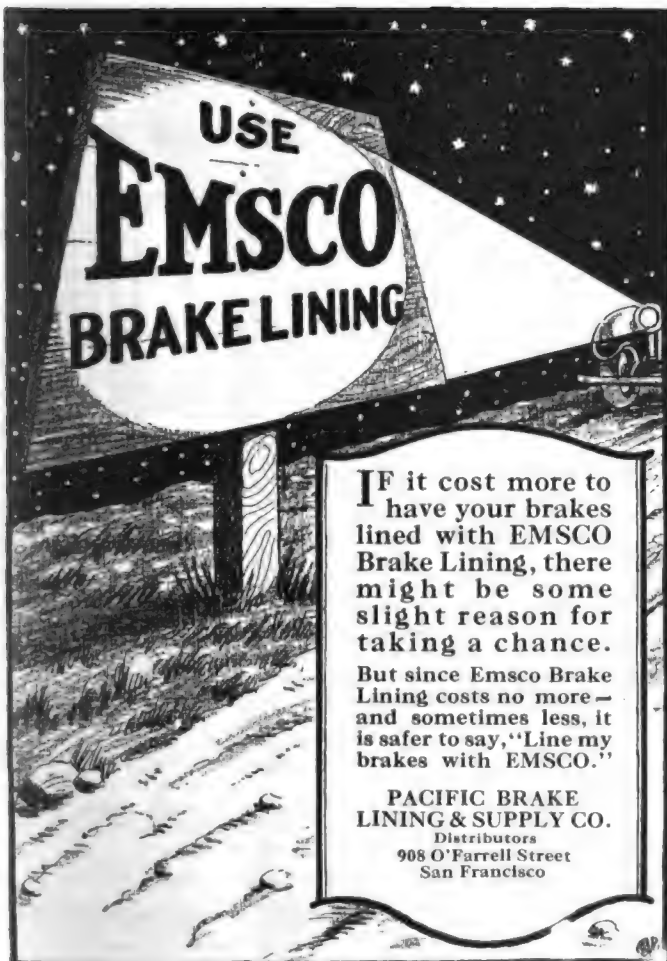
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city is suddenly stricken with a serious illness. His doctor speeding swiftly to his side in an automobile diagnoses his malady, prescribes an operation, rushes him to a hospital in an automobile ambulance and by virtue of the time saved by motor vehicles operated over good highways saves the man's life. Who used the highways? Who benefited from them? Obviously, both the sick man and the doctor, but where can the line be drawn? Should the sick man who owned no automobile but was made well by a combination of motor vehicles and good highways pay nothing toward highway financing, or everything, or 25 per cent? What should the doctor and the hospital who owned and operated the motor vehicles, and whose efficiency were increased thereby, pay? Clearly the mere putting of these questions demonstrates the futility of seeking an accurate answer by this method of

assigning intangible and unmeasurable benefits.

Or to take other illustrations, the farmer, the factory, the jobber, the public, benefit from the lower cost of distribution due to improved highways. The realty owner along the improved road finds his property immensely increased in value, but how shall these benefits be measured?

Although the improved highway benefits the entire community, it is generally recognized that the motor vehicle user (plus the farmer) is the most insistent pleader for better roads. There is a relationship between the growth of good roads and the increase of cars and trucks. There is a public sentiment that this somewhat special, though by no means exclusive, benefit should be reflected in some form of special taxes. The question is, what is an approximately fair measure?

The Motor Vehicle Conference Com-

mittee feels that special motor vehicle impositions for the current maintenance expenses of the highways, including minor repairs, regulation, and administration, are the most accurate measures that can be found of special benefits accruing to the automobile from improved roads.

Motor vehicle owners in their capacity as a large part of the general tax payers, along with non-owners, contribute toward the capital outlays necessary to establish improved highways which redound to the general good of everyone. The motor vehicle owners, however, get the most obvious and immediate use of these roads, subjecting them to wear and tear. Let the special fees which they pay be sufficient to offset this wear and tear. Such should be the platform of maximum generosity on which the motorist can take his stand. If he pays for the highway upkeep, society can well afford to invest the principal.

YOUR CAR'S VACUUM SYSTEM

(Continued from page 22)

gasoline. Then close all three holes with solder, using as little as possible so as not to change the weight of the float appreciably. Test the float in hot water to see that it is tight.

Thoroughly clean the filter screen. Next see that the float wire is smooth and has not been bent. Hook springs to yoke and lower float into the tank. See that the float wire is started into

the wire guide mounted on the flap valve. Then replace the cover and the eight screws. In reattaching the pipes extreme care should be exercised to see that all connections are made tight.

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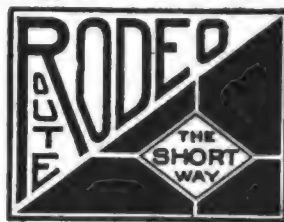
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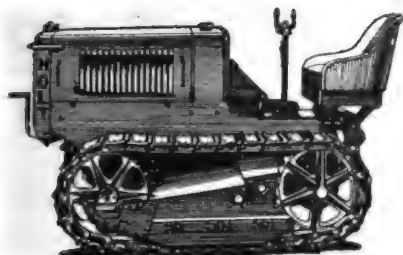
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Disteel was thoroughly disproven this idea for the basic principle of its mechanical construction is the foremost reason for its greater beauty—this is the inward curve of Disteels—so constructed because only in that way can road shocks be properly carried to the axles without weakening the metal in the disc.

The inward curve presents wonderful opportunities for color treatment and blends with the modern trend of motor car design for the reason that it was developed by an American engineer.

Manufacture of Air Springs

The Pneumatic Cushion Company of San Francisco, patentees and manufacturers of Gruss Air Springs, announce the closing of a license agreement with the Cleveland Pneumatic Tool Company, Cleveland, Ohio, for the exclusive manufacture and sale of Gruss Air Springs in the territory east of the Mississippi River, and for export trade. No change will be made in the manufacturing and selling arrangements in the West, and the San Francisco plant of the Pneumatic Cushion Company will continue to supply the needs of the western territory.

The Cleveland Pneumatic Tool Company, one of the largest manufacturing organizations in the United States, with branch offices and distributing facilities in all the principal cities of the world, is planning international distribution for Gruss Air Springs. The Cleveland plant has already entered into production and sufficient factory space and equipment has been set aside to meet all demands. The Company's Canadian and European plants will also manufacture Gruss Air Springs as soon as conditions warrant.

Before entering into the agreement now announced, the Cleveland Pneumatic Tool Company's engineers subjected Gruss Air Springs to the most exacting tests. It is said that the mechanical excellence and efficiency of Gruss Air Springs was most forcibly proved by the long list of large corporations in the West who have adopted them as standard equipment. The Standard Oil Company, Union Oil Company, Shell Oil Company, General Petroleum Company, Pacific Gas and Electric Company, Western Meat Company, and many others, have equipped fleets of trucks with Gruss Air Springs, and they have also been adopted by a majority of the auto stage lines as standard equipment. An extended investigation among passenger car owners revealed universal satisfaction and proved conclusively that Gruss Air Springs provide comfort, economy and safety to a degree heretofore unattainable.

The Cleveland Pneumatic Tool Company's exhibit of Gruss Air Springs at the New York and Chicago shows just held attracted widespread attention. The interest shown indicates that the demand in the East will develop rapidly, and the Company is looking forward to the enjoyment of a large and satisfactory volume of business on this product.

It is expected that the coming year will see a tremendous increase in the number of cars and trucks equipped with Gruss Air Springs as a result of the intensive advertising and selling campaigns that will be conducted simultaneously by the western and eastern organizations.


As a result of the new connections established by the manufacturers of Gruss Air Springs, another name is added to the list of western products that have reached out and successfully captured the national market.

Radoye Directs Sales Promotion

Gilbert U. Radoye, director of advertising of The Haynes Automobile Company, Kokomo, Indiana, has been appointed to the additional position of director of sales

promotion, according to an official announcement by Alton G. Seiberling, vice-president and general manager. Mr. Radoye has had a varied and extensive experience in the sales promotional and merchandising field.

Champion Changes Name

Effective April 1, the Champion Ignition Company of Flint, Michigan, will be known as the A. C. Spark Plug Company. The change effectively ties up the long-established "AC" trade-mark and product with the firm name. 

New Motor Clock

Six years ago A. E. Keith, inventor of the automatic telephone, decided to make a clock that would tell him the correct time from the dash of his car.

Like all motorists he realized the chief difficulty with motor car clocks is winding them. It seems to be impossible for the average man to wind his motor car clock regularly. Just when a man wants to know the time he finds his clock has run down.


So Keith used electricity. The Keith-Landis Electric Clock is driven by current from the regular wiring system on the car—it requires no winding.

Next he found that a common source of trouble was the mainspring. To be good, a mainspring must be highly tempered, which gives it a tendency to crystallize and break when subjected to the jars and jolts of motor car service. So the Keith-Landis Electric Clock has no mainspring.

Several models were made up and for the past five years they have been punished by the hardest kind of service. Five years of continuous use—thousands of miles of fast driving over rough country roads—have proved that the day of inaccurate automobile clocks is about to end.

So accurate have the Keith-Landis Electric Clocks proven themselves that the Keith-Landis Corporation of Chicago issues with each clock a Fidelity and Casualty Company policy insuring accuracy to the satisfaction of the user.

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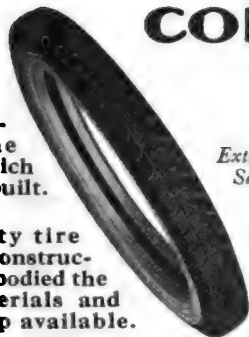
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The Federal Rubber Co.

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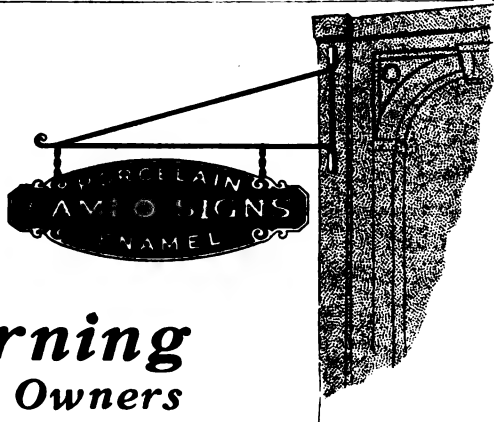
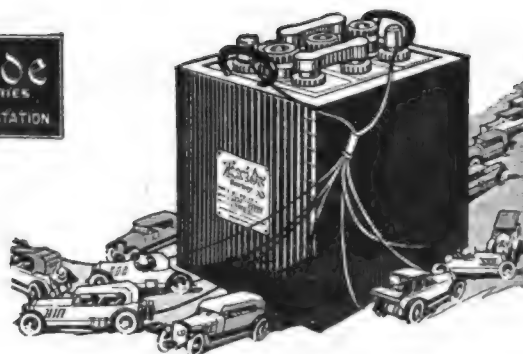
The first starting and lighting battery (1911) was an Exide; just as Exide has been the pioneer in all other fields where storage battery power is used.

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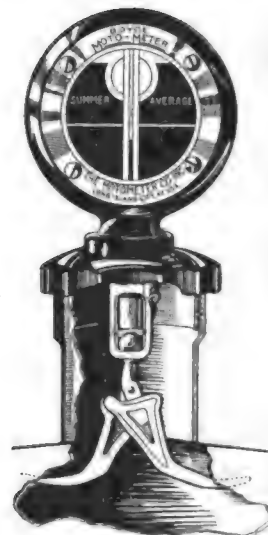
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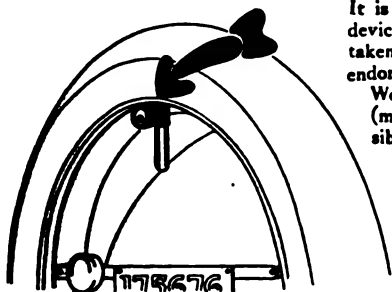
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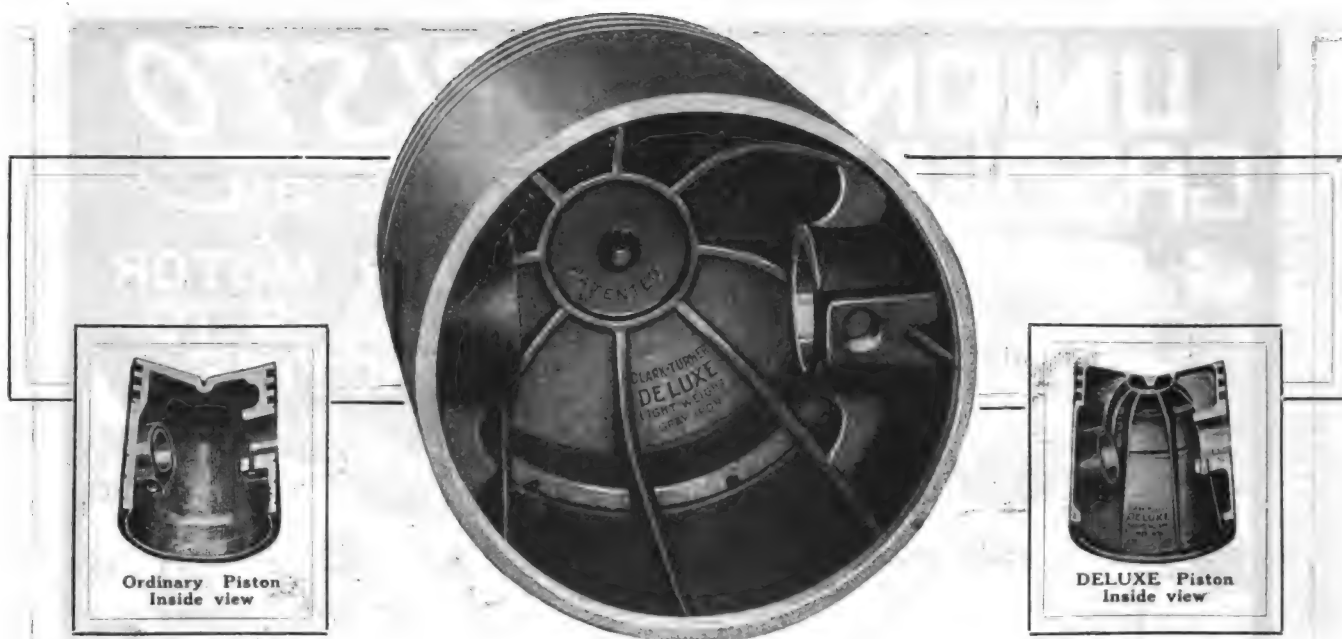
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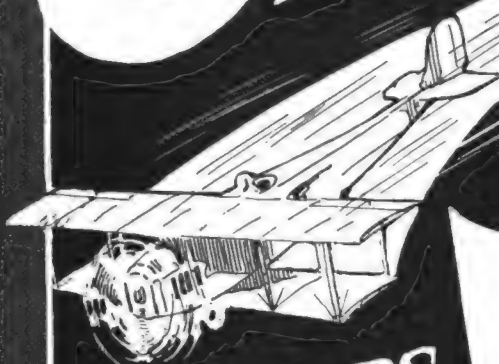
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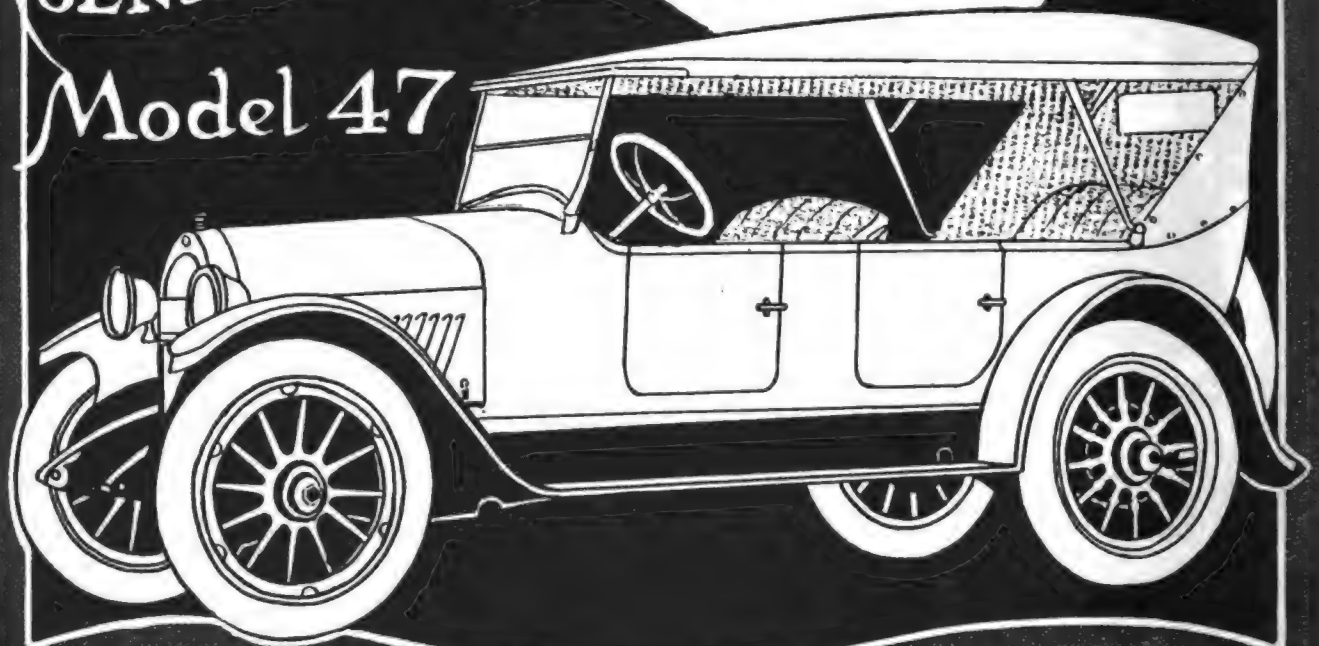
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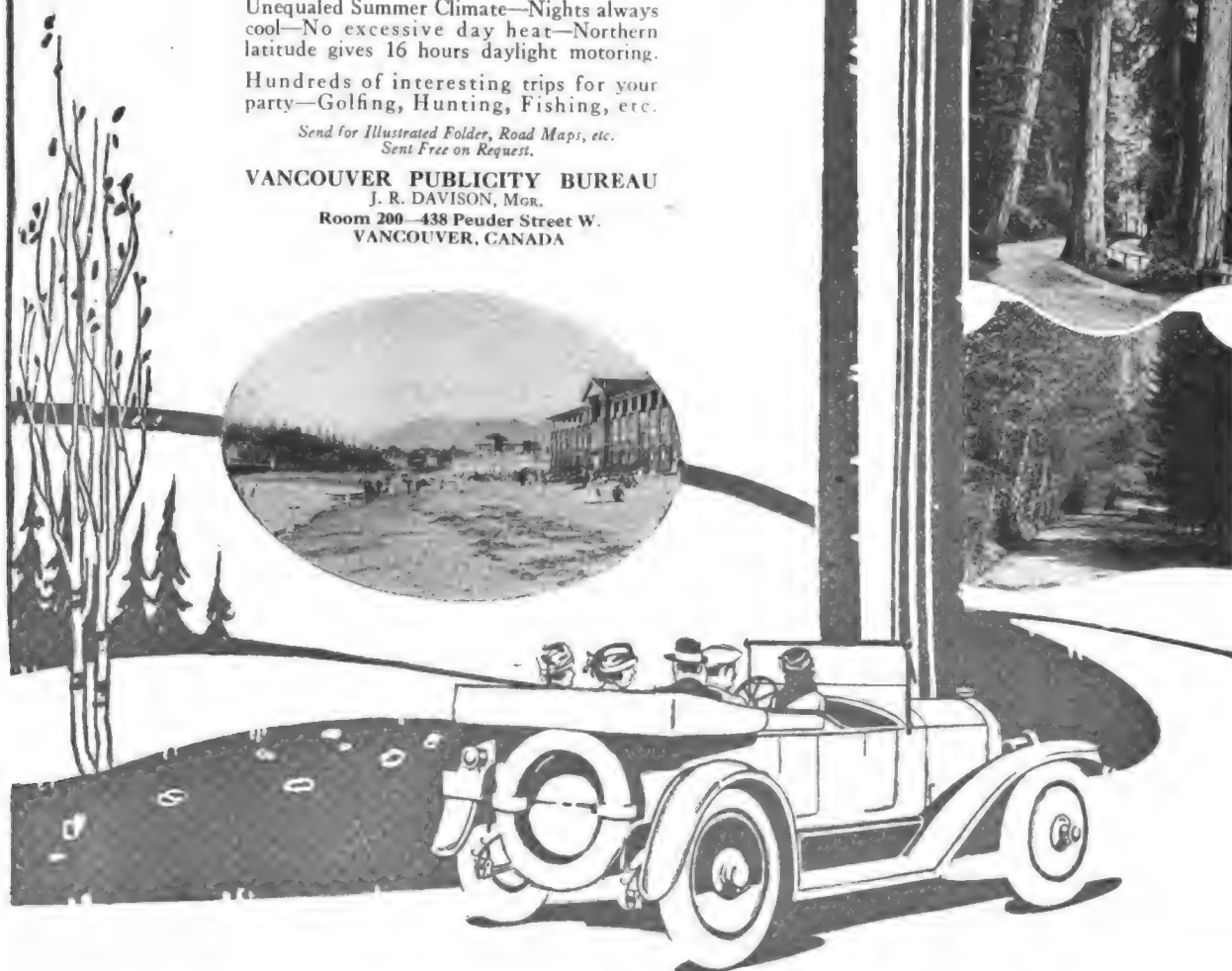
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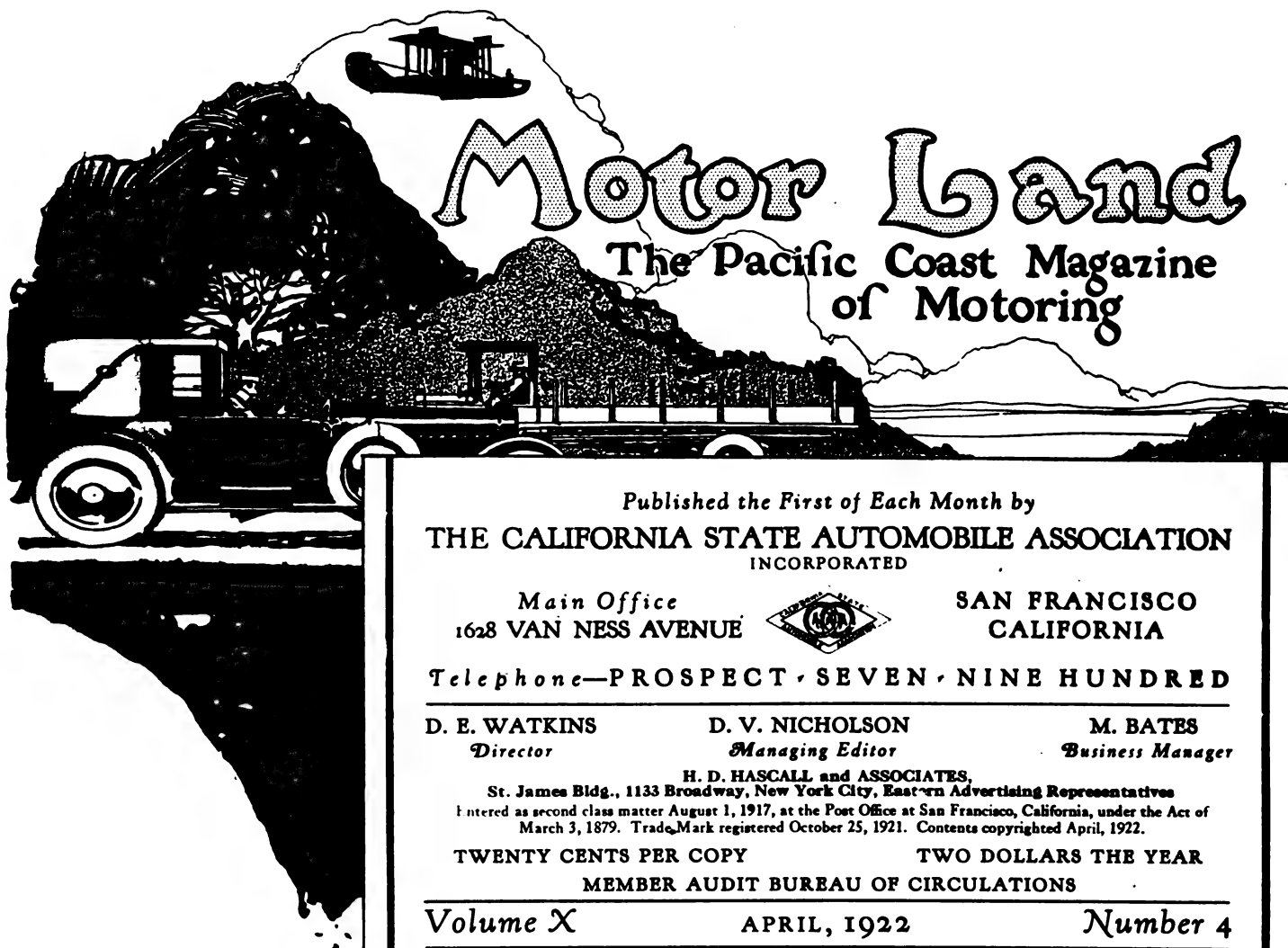
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The Pacific Coast Magazine of Motoring

Published the First of Each Month by
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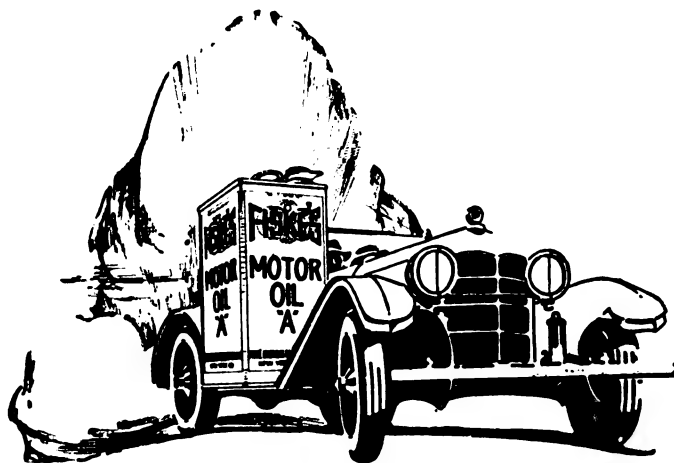
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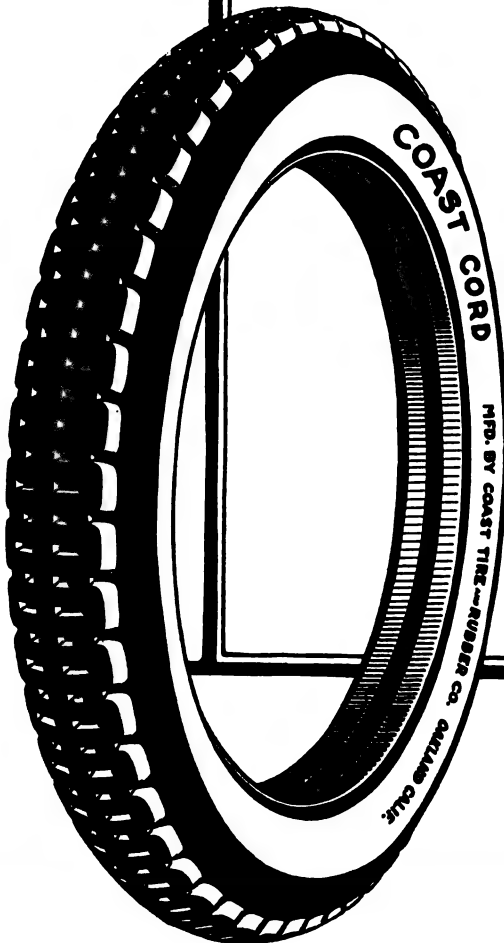
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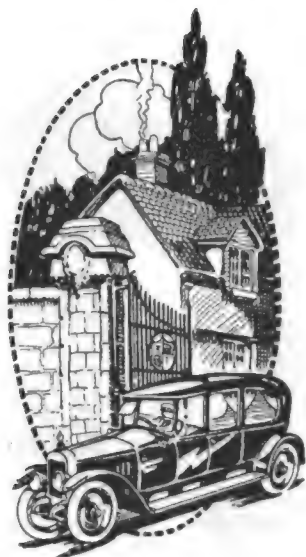
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CURRENT COMMENT

California's New National Park

THE call of scenic California and our National Parks brings scores of thousands of worth-while visitors every year. In 1921, 91,513 people visited Yosemite, an increase of 22,607 over the previous year, and 58,577 people visited the Sequoia and the General Grant National Parks. During the twelve months ending September 30, 1921, 15,483 private autos entered Yosemite, carrying 53,338 people and representing every State in the Union, with four exceptions.

These great scenic attractions have become a recognized factor of the first magnitude in the intensive development of California and it is reasonable to assume that the same advantages accrue elsewhere in America where National Parks and scenic values attract the traveler by train and auto through the lure of the great out-of-doors.

But California has another wonder of Nature, about midway between Yosemite and Crater Lake National Park in Southern Oregon—a splendid link in America's chain of magnificent scenic gems. Lassen Volcanic National Park, in upper California, is unique in its scenic and scientific interest. Dedicated as a National Park during the world war period, the time was inopportune to inaugurate the desired and desirable development—the park was

new, and neglected by its cheerful owner, Uncle Sam.

California now seeks administration and development of this wonder region, not for herself alone, but for America and for visitors from afar. The wonders and features of unique interest of Lassen Volcanic National Park are described in this issue of *MOTOR LAND* by M. E. Dittmar, who knows the park as few men know it, and an organization has been formed, of which he is manager-secretary, to further development of the park.

The organizing personnel of the Lassen Volcanic National Park Association of California is assurance that results will be obtained.

The national scope of park development is indicated by the fact that last year 1,171,797 visitors availed themselves of the recreational and educational opportunities which the parks offer. The appeal for congressional support, in the Annual Report of the Director of the National Park Service for 1921, should get results. From it we glean a few excerpts:

"Strange as it may seem it took the world war to impress the country with the realization of its great scenic treasures.

"But when the conflict was successfully ended and the time had come for

recuperation, tired minds and bodies turned to national parks. At once park travel leaped to unprecedented figures. Our tourist facilities were overwhelmed, but still the crowds came. The travelers returned refreshed, rejuvenated, better men and women from their visits to the great open breathing spaces. They inspired others with the lure of the parks and their sublime scenes.

"Surely it is conclusive proof that the parks are stabilizing and inspiring influences in times of national restlessness.

"Is it not obvious, therefore, that our parks take their place at the head of those worth-while things in our national life that make for better citizens—that provide for clean, healthful diversion, recreation, and enjoyment. There is no finer opportunity in the Americanization movement than to spread the gospel of the parks far and wide.

"Adequate appropriations for a few years would increase the popularity of the parks, which in turn would be reflected in increasing revenues derived from their operation. Eventually the parks should be practically self-supporting."

With this purpose and the appeal all motor land is in hearty accord.

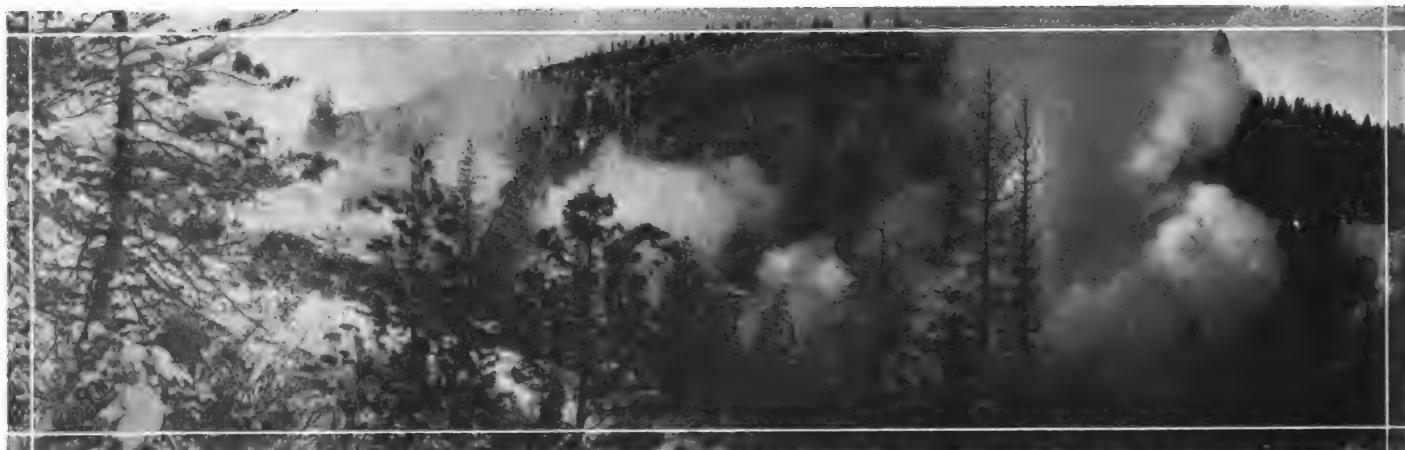
The Selfish Camper

With the increase of that species of motorist who carries with him his pots and his pans, his kettles and bacon, his bed and board, whenever he essays a trip of any length, has come an increase in the number of municipal automobile camps throughout the State. And with the joy that these municipal camps have brought there likewise has come a great deal of grief.

In the first place, the fact that a man leaves his ordinary duties and seeks the open country does not necessarily mean that he leaves behind him all the selfishness and carelessness which marked him in his business and social life. Perhaps it may even develop this side of his character, otherwise latent. Consequently we find scores, yes, hundreds

of motor campers who accept of the hospitality of the cities through which they travel but forget to "clean up" when they are ready to pull stakes and journey onward.

When you break camp, see that all fires are out. Burn your rubbish. Clean up so that the next fellow who drops in will find the welcome rug in its accustomed place before the door.



Not a forest fire, but steam rising from the Devil's Kitchen—an awe-inspiring geyser area.

TOURING IN "NATURE'S CURIOSITY SHOP"

By M. E. DITTMAR

"To him who in the love of Nature holds Communion with her visible forms, she speaks A various language."

—William Cullen Bryant.

"NATURE'S CURIOSITY SHOP!" Thus will visitors designate Lassen Volcanic National Park after having viewed its unique scenic and scientific wonders. Perhaps the reader will agree, after reading this descriptive story, but it may be well to quote a trained observer in corroboration of our enthusiasm.

In 1915, after the great explosive eruption of May of that year which rent the flank of Lassen Peak, Prof. Douglas W. Johnson of Columbia University and a party of educators from among America's greatest universities with advanced students and teachers of geology and geography visited the splendid chain of national parks of the West. Among the members of this party were: Prof. E. C. Jacobs of the University of Vermont; Prof. C. W. Brown of Brown University; Prof. Florence Bascom of Bryn Mawr; Prof. Ida H. Ogilvie of Barnard College; Prof. A. C. Boyle of the University of Wyoming, and Miss Dora Keen of Philadelphia, mountain climber and explorer. Twenty-eight members of this party completed the entire trip, lasting two months, and included Yellowstone Park, Glacier National Park, the Lake Chelan Country, Crater Lake National Park, Yosemite Valley, Lassen Peak, Pikes Peak, and the Garden of the Gods, with a special side trip to the Grand Canyon and the Petrified Forests.

In writing to Congressman Raker of the Third California District, who was then actively working for the dedication of the Lassen region as a National Park, Prof. Johnson stated: "The party was unanimous in enthusiastic praise of the beauties and wonders of the mountain and its associated volcanic phenomena, and the impression was general that no part of the

excursion had been more interesting and profitable."

This is not a comparison—all of our National Parks have their unique attractions—for Lassen Volcanic National Park is different, it stands out alone in the United States, the superlative in recent expressions of volcanism.

Re-Awakening of a Volcano

On Decoration Day in 1914, after a long period of quiescence, the great volcanic pile reasserted itself. Within the old crater a new vent was formed by a series of explosive eruptions which continued in frequent periodicity for nearly a year. In this manner the old volcanic throat was cleared and an oblong, funnel-shaped opening formed about 1,000 feet in diameter in its greatest dimension, and with a depth of seven to eight hundred feet below the higher ridges of the old crater rim.

The clearing of the volcanic conduit and the old crater was followed by an effusion of new basaltic lava, forced upward by the rising molten magma in the interior of the mountain or by the pressure of gases and superheated steam, which filled the crater with a new volcanic plug.

The effusion of new lava was sufficiently plastic to permit adjustment to the irregularities of the crater which it filled—this would indicate a temperature approaching incandescence—and sufficiently extensive to overflow the lowest notch of the old crater rim, extending down the west slope of the peak for nearly a quarter of a mile toward Manzanita Creek.

The final violent eruption of May 22, 1915, forced a column of steam and volcanic dust to a height of 36,000 feet above the peak, the superheated steam and volcanic gases escaping from the

fractured mountain side and from underneath the new lava lid with explosive energy, flared out like a great fan, devastated an area of several square miles, impinging on the slopes of near-by peaks, its limits marked through the forest like the pathway of a reaper's scythe.

A Volcano Simmered Down

This spectacular eruption probably marked the culmination of violent explosive activity after almost a year of renewed volcanic play, for the resultant fissuring and fracturing of the mountain permits the continuous escape of volcanic forces, which previously accumulated causing periodic explosive eruptions, and consequently Lassen Peak has "simmered down."

The mountain is now safe to visitors, while the evidence of its recent power and greater activity is awe-inspiring to behold.

While on the summit of the crater lid, during last July, the writer observed numerous fractures and vents in the new lava from which steam and heated gases were continually escaping. Twenty-seven active vents were counted from one position.

The recent mild eruption reported as taking place on March 12th was apparently caused by a slight accumulation of pressure on the northeast slope of Lassen Peak; before the pressure could attain sufficient force to cause an explosion the fracture on the mountain side permitted the escape of the accumulating gases and superheated steam; it was probably of a nature that might have been observed with perfect safety from a distance a few feet from the volcanic vent.

Recent Works of Vulcan

While the recurrence of volcanic play on Lassen Peak is of immediate

interest, it was known to geologists and scientific investigators that the Lassen region has other expressions of recent volcanic activities that are even of greater scenic and scientific interest. In this category are the spectacular Chaos Crags which were built up by an effusive eruption only a few centuries ago; here the viscous dacite lava was piled about the volcanic vents to a height of from three to four thousand feet above the older lava beds, and to a width of a mile or more with an extreme length of $2\frac{1}{2}$ to 3 miles. This chaotic pile lies only a short distance north of the main peak and forms an impressive sky line which may be seen for a distance of a hundred miles or more along the main routes of travel in the Sacramento Valley, both by rail and the Pacific Highway.

Ten miles northeast of Lassen Peak one of the wonder regions of the Park has been created where "Vulcan wrought in recent times." Volcanic regions the world over have their cinder cones, but the Cinder Cone in this region with its rugged terraces of lava and encompassing forests and coeval lakes, and its base encircling dunes of chromatic sand, is Nature's masterpiece in cinder cones. The cone is composed of scoria and lapilli laid down with great uniformity. This volcanic ejecta is very light and pumiceform in character and was no doubt blown from molten or plastic magma accompanied by superheated steam and gases in a vertical eruption. Playing like a fiery fountain and falling evenly about the crater, it formed the symmetrical structure as it now appears.

Cinder Cone is about 2,000 feet in diameter at its base, and about a mile in circumference; it rises to a height of more than one-eighth of a mile above the basin, which its lavas occupy, while its symmetrical contour can best be compared with a giant inverted bowl; its base is encircled by a scattering ring of volcanic bombs which were ejected from the crater. In color the cone is a pleasing slaty gray which blends into soft tones of red and yellow

on its easterly exposure, suggesting the tints of a mellow, tawny dawn. The sides are very steep—everywhere a high angle of repose seems to have adjusted itself in perfect equilibrium—yet it is not hard to scale on the spiral cinder path.

On the summit of Cinder Cone a double crater exists as symmetrical and flawless as though the volcanic play had just subsided. The diameter of the outer crater is about 750 feet and the inner crater—a rim within a rim—about 350 feet. Its depth is 240 feet. The view from the top is unique in the extreme; the spectacular lava flows from the base of the cone spread in rugged jumbles for several miles, the borders terracing high above the picturesque lake which marks their confines north and south, or encroaching upon the edge of the encircling forest the jagged fronts standing sheer above the pines.

Extending from the base of Cinder Cone to the enclosing lava flows, a fantastic field of volcanic dunes greets the eye. Each individual dune has its concentric rings of color in various tones of red, orange, yellow and brown, usually at its apex, showing that they are in their original position and were formed by mild eruptions of volcanic sand and lapilli. The rings of color were probably caused by the changing character of the aqueous and gaseous emanations.

On the southern base of the cone is the great vent from which the lava poured, the congealed river of basalt, swinging from it in a graceful curve to the southeast where it forms a rugged shore line of Lake Enchantment or Snag Lake, and thence to the east, northeast and north, where it projects in sharp peninsulas, forming the shore line of Butte Lake, whose spectacular grandeur in its mountain setting is beyond compare.

The viscous lava spread from the main stream in sluggish diverging currents, forcing the older flow to either side, forming rugged crests and spectacular piles. These recent lava flows

cover an area of from 3 to 4 square miles; viewed from a short distance, and from its general elevation or from the surrounding heights, the effect suggests a rich chocolate colored tableland, but within the field all is chaos. The impression is one of a geological event just closed and its newness is evidenced by the presence of charred stumps and trunks of trees still standing on the edges of the lava flow, which formed a part of the older forest before the fiery ordeal of geologic yesterday.

The recent origin of the Cinder Cone region and its associated multicolored dunes and fantastic lava fields mark it of unusual scientific interest and a unique feature of Scenic America.

Where Mountain Ranges Meet

Lassen Peak is on the geological boundary between the Cascades and the much older Sierra Nevadas. The older formations associated with the Sierras were covered by the more recent Lassen lava flows, and subsequently exposed again by the deep erosion of the Feather River and its tributaries. It rises to an elevation of 10,460 feet above sea level and practically 10,000 feet above the Sacramento River, 35 or 40 miles in air line to the west.

While the Lassen Volcanic National Park contains many features of scenic and scientific interest, easy of approach—in fact accessible to automobiles—yet the lure of the ascent will always remain the great challenge to the hardy, ambitious explorer and mountain climber. The view from the lookout on the summit is unobstructed in all directions—to the northwest, nearly 100 miles away, Mount Shasta, robed in eternal snow, stands out from its majestic forested setting, and far beyond other giants of the Cascade Range and the rugged Siskiyou carry the vision into far off Oregon. Farther west the lofty Salmon River Range comes within the view, its snow-clad crests rising high above the deep canyons draining toward the Trinity and the distant Pacific. Still farther to the



Lake Tartarus or "Boiling Lake," a unique scenic feature of Uncle Sam's near playground.

west 150 miles away the South Fork Mountains screen an ocean view, and midway, but still beyond the wide valley floor of the Sacramento, the Yolla Bolly, the Bully Choop and the Trinity Mountains are silhouetted against the more distant forest mysteries of the Trinity country. To the southwest and south the great valley of the Sacramento fades away into the hazy distance while from the meeting of the mountains at the southerly base of Lassen Peak down over the crest of the Sierras, the vista extends into the heart of California. East and northeast the great lava plateau slopes toward Eagle Lake and Honey Lake Valleys, with frequent peaks, piled up about some ancient volcanic vent, alone or in groups, as prominent landmarks in the intermountain region between the Cascades and the distant Nevada ranges. For a radius of 150 miles, mountains and valleys, forests and plains, rivers and lakes, canyons and streams are revealed in cycloramic majesty.

Encircling Lassen Peak and in the immediate foreground the lesser peaks and craters cluster in Alpine grandeur. Perhaps the most picturesque is the serrated range connecting the main

peak with its most imposing neighbor—Brokeoff Mountain. This skyline range, composed of six pinnacle and dome-shaped peaks rising above 9,000 feet in altitude, forms the watershed between Manzanita and the Battle Creek tributaries to the northwest and Los Molinos Creek to the south and east. Los Molinos Creek is the "Mill Creek" of the present day, but the name applied, inherited from Spanish and Mexican occupation, should be retained for its historical associations—it is not the new name but the old one that in this case has its appeal.

Tell-Tale Marks of Glacial Ice

On either slope of this high divide the work of glaciers is in evidence. Terraced glens once filled with glacial ice, and canyons deeply scoured below great walls of lava, at times a thousand feet and more in height, formed by the flow of older Lassen lavas arrested by its antithetic element.

Alpine lakes by the score reflect silvery in the distance or azure and emerald to the nearer view. Far to the southeast, near the distant limits of the Park, Juniper Lake may be made out, which is the largest body of water

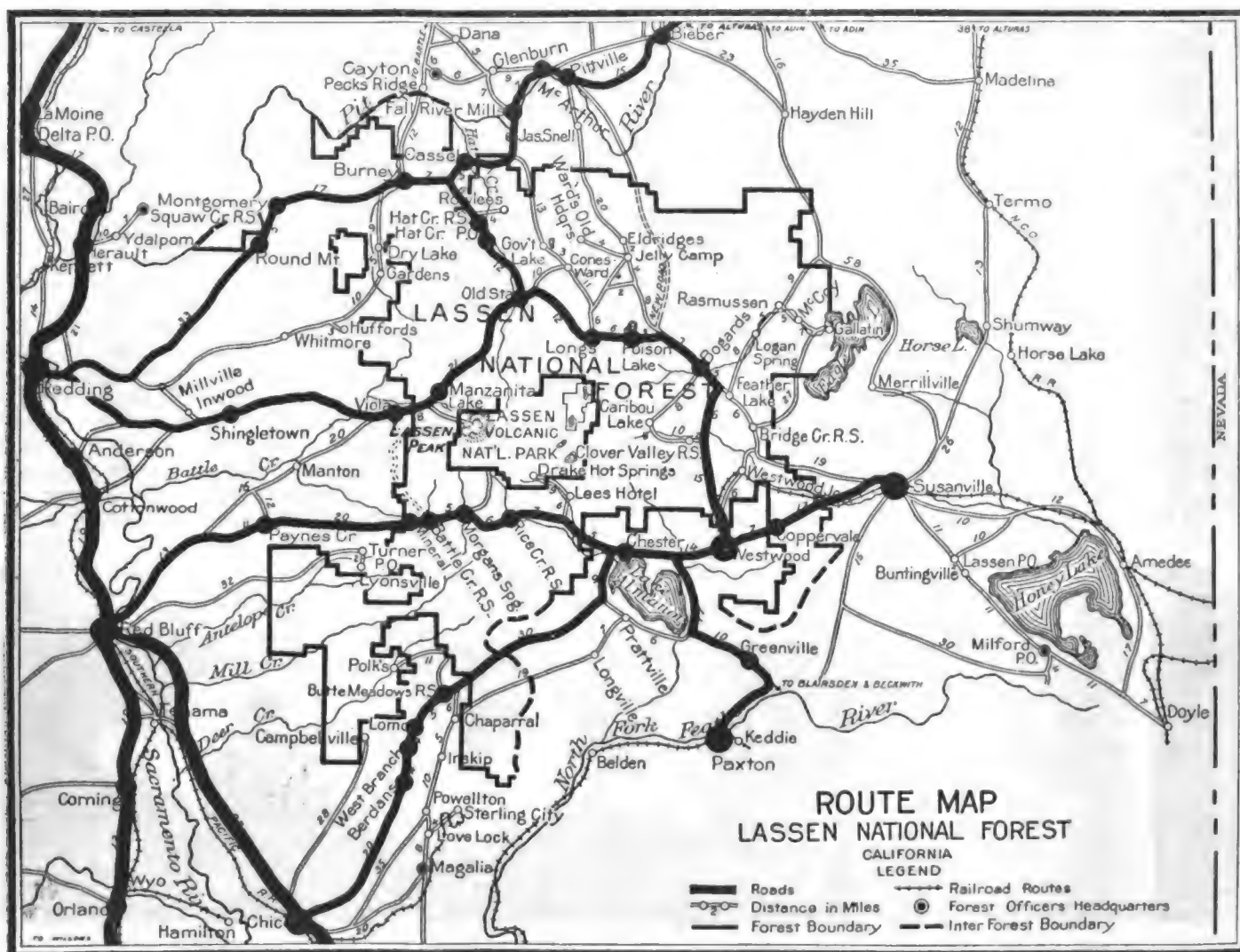
within the Park area. Outside of the Park limits the great artificial lake on the North Fork of the Feather River, Lake Almanor, the source of vast power and life-giving waters released to the distant valleys, is spread like a great realistic map. Many smaller lakes scintillate in their forest setting, offering exquisite camp sites and angling for the sportsman.

With few exceptions the lakes of the Lassen region are well stocked with gamy trout, the Rainbow predominating, and all the mountain streams lying within this region and coursing toward every point of the compass are likewise the habitat of different varieties of trout both native and exotic.

A Mountain Climber's Mecca

Three major starting points invite the ascent to the Peak. To the south of the Park running 6 to 10 miles distant, the Red Bluff-Susanville State Highway lateral is well advanced, and with the current year will largely supersede the old county road which formerly offered the only means of access throughout this region.

From this State Highway lateral diverging at Battle Creek Meadows





*Explosive eruption of Lassen Peak June 14, 1914; from Manzanita Chute. Chaos Crags to left.
Photo copyrighted by B. F. Loomis.*

near Mineral, the summer headquarters of Lassen Forest, 6 to 8 miles of approach road toward the southern boundary of the Park has been constructed, and, during the present season, it is expected that this approach will reach the boundary of the Park proper in the vicinity of the old sulphur works on Los Molinos Creek. From this point the old forest trail is used in negotiating the ascent to the summit—a total distance from the State Highway of approximately 17 miles.

On this trail there are many points of interest, particularly the solfataric area of Los Molinos Creek, and the weird "Inferno," known as "Bumpass' Hell," on a by-path about a mile and a half from the main trail. The trail itself skirts Lake Helen, situated at an elevation of about 8,000 feet above sea level and covered with ice until late in the summer, but when once revealed it is the color gem of the Park. This lake occupies an extinct crater, the remains of the ancient rim forming a crescent around its shores. Its deep azure hue, as viewed from the surrounding cliffs, suggests the better name, "Sapphire Lake"—a replica in color of the famous Crater Lake of Oregon. From this point the final climb begins an additional half mile of altitude to the crater and its highest peak.

The Feather River Approach

From Chester on the State Highway lateral situated near the northerly shore line of Lake Almanor, 18 miles of approach road by the way of Warner Valley has its terminus for auto travel at Drakesbad, near the southeastern extremity of the Park.

In Warner Valley and from Drakesbad mounts may be secured to negotiate the final 8 miles of trail leading to the summit. From here, too, the geyser area of the "Devil's Kitchen" and the marvelous "Boiling Lake" is readily accessible, and because of these points of natural interest, this approach has long enjoyed great popularity.

The Manzanita Portal

From the Southern Pacific Railroad and the Pacific Highway at Redding the old pioneer road over the Shingletown Forest Plateau to Manzanita Lake is being developed into a beautiful drive.

Starting with the mountain in full view, flanked on the right by the skyline range to Brokeoff Mountain and on the left by the rugged Chaos Crags, the wonderful horizon of the Lassen region makes its appeal. For a short distance the view is screened by the terraced lavas of the foothills which mark the edge of the flow and the forest area growing denser and more varied as moderate altitude is attained. The gradual climb to the higher elevations over an easy grade is frequently enlivened by the magnificent vistas of the objective mountain region. The forest trees—"God's first temples"—at elevations ranging from 2,000 to 4,500 feet, and for 30 miles of distance,

are in themselves magnificent. The wonderful sugar pine with its horizontal boughs and pendant cones; the great columned trunks of the yellow pines with russet bark in splendid contrast to the verdure of the forest green; the majestic firs and innumerable minor growths that make the forest beautiful, all have their lure and separate appeal to the visitor.

Manzanita Lake, at an elevation of 5,700 feet above sea level and only three and three-quarters miles in air line from the summit, and near-by Lake Reflection nestling at the base of Chaos Crags—the mountains mirrored in their still waters with reflection magnified as clear as the original—offer a magnificent starting point for many side trips into the Park and for the final climb with an inspiring panorama of Lassen Peak, flanked by majestic lesser peaks and crags always in view.

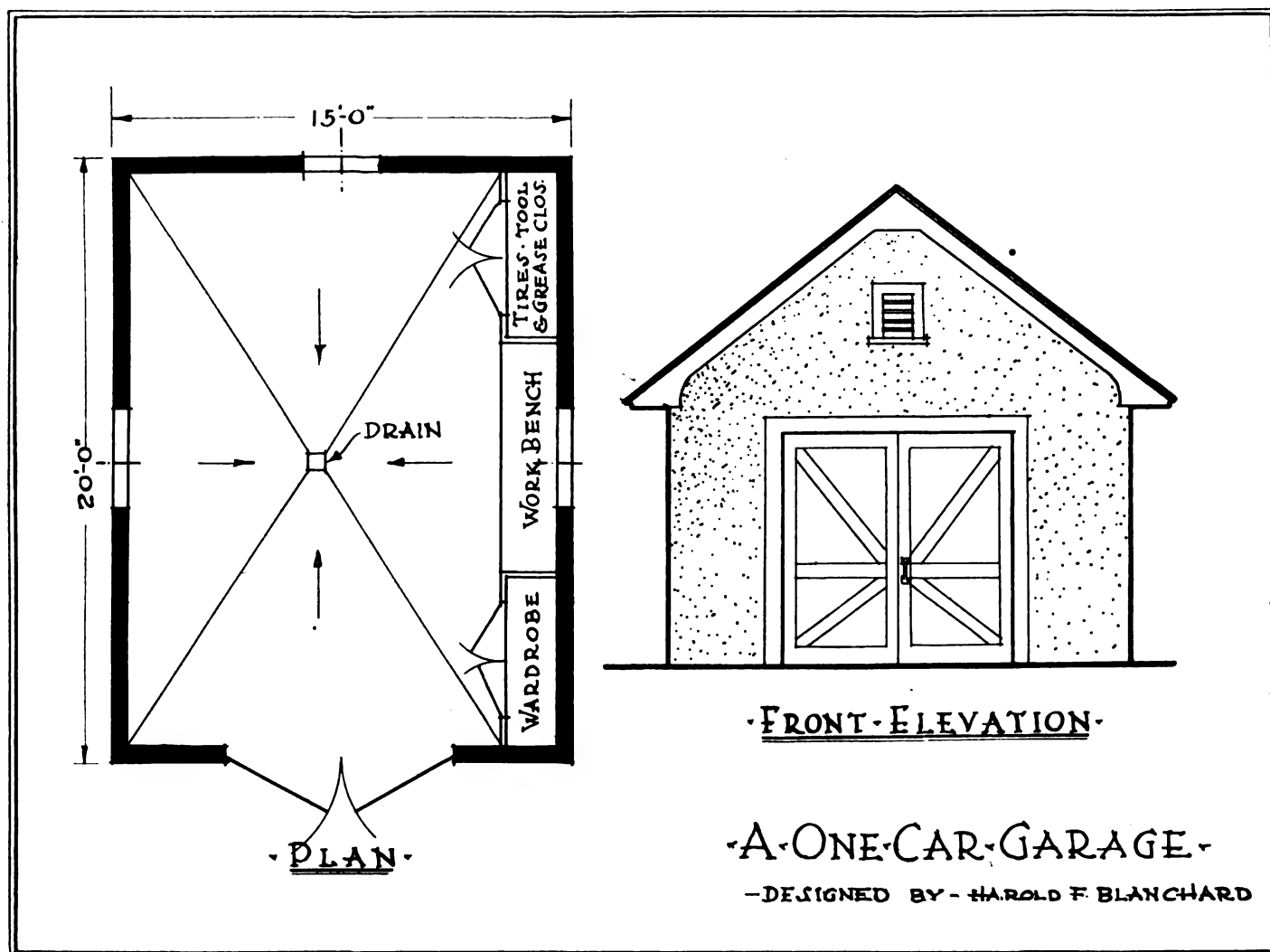
An easy grade will make it possible to extend the present automobile road from the lakes to a glacial terrace at the head of Manzanita Creek, a distance of 5 miles. From this point, where the mountain stream gushes out from the base of a lava cliff rising in terraced grandeur like a great wall to a height of a quarter of a mile and more, a bridle trail is to be constructed during the present season which will make it possible to attain a point only one-third of a mile below the Peak on its southeasterly exposure. This approach and trail to the summit was blazed by the writer during the past autumn, and its scenic value and the beautiful vistas along the route were given full consideration in its selection.

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Photo copyrighted by W. S. Valentine.

Lassen Peak in repose from Manzanita Lake.



BUILDING A PRIVATE GARAGE

Valuable Hints for the Motorist Who Would Keep His Car at Home

THE building of a private garage is a matter which demands careful thought and good judgment. It must have no waste space in it in these days of high building costs; on the other hand it must be large enough to meet the requirements; it must be attractive to the eye, a distinct asset to the home and its surroundings.

Its size should be carefully considered. All automobiles are approximately 6 feet wide, but they vary considerably in length. At one extreme is the Ford, measuring 11 feet from stem to stern, and at the other are the Locomobile, Rolls-Royce and Pierce-Arrow, scaling about 18 feet from bumper tip to spare tire. A Cadillac is about 16 feet over all. Medium sized sixes measure about 15 feet, the smaller sixes and larger fours, 13 to 14 feet, and there are several small four-cylinders just a trifle bigger than a Ford which measure 12 to 13 feet.

The man who is interested in extreme economy of construction will be attracted by a garage that is just large enough. On this basis a garage for a

Ford might be made 7 by 12 feet inside. Wood guides in the floor could be used to prevent scraping either wall in driving in or out. Such a small garage would be satisfactory provided it was never necessary to do any work on the car while it was in the garage and provided that no space in the garage was devoted to storing spare tires and other articles. In order to work around the car a space of 3 feet is not any too much, particularly if the car is to be washed in the garage. Therefore if a 3-foot strip is added to the dimensions of a Ford the width becomes 3 plus 6 plus 3, or 12 feet, and the length becomes 3 plus 11 plus 3, or 17 feet. While these figures are theoretically satisfactory for a Ford, it will be clear that it will not be difficult to house larger cars in a building of this size. On the contrary, if a Ford garage is built just 7 by 12 feet, the owner can never place a car larger than the present Ford in it.

The average private garage should be 12 by 20 feet. Such a building is not only ample for the average auto-

mobile but it is large enough to accommodate any automobile. The owner of such a garage, in considering the purchase of a new car, need not worry about whether it will go into the garage or not. He can be sure that it will. The experience of the man who built a garage for a Hupmobile and later bought a Pierce-Arrow only to find that his building was a foot shorter than the car will not be repeated.

A garage 12 by 20 is quite satisfactory for a moderate sized house, the assumption being that the owner of this dwelling is likely to have a car in keeping. But for similar reasons the larger houses should have larger garages, built to accommodate cars 6 by 18 feet. Allowing a 3-foot strip all around the car the building dimensions are found to be 12 by 24 feet.

In order to accommodate wardrobes, cupboards, and to have space for oil cans, spare tires and various other equipment required for an automobile, it is often advisable to increase the width of the garage to 15 feet, making

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MILADY MOTORIST

Solving the Spring Problem of What to Wear

By EDITH M. GARFIELD

THE woman's side of the automobile question is not one whit less important than the man's, but it follows different lines. To her the technique of motoring is secondary to the always momentous question of "What shall I wear?"

Of course there are those fortunate women who own several motor cars, and have charming costumes especially designed for each car. While this is a splendid arrangement, indeed, it is unnecessary, and often im-

possible. After all, the individuality of the wearer is the first consideration, and next to that comes the selection of clothes suited to the lines, color and general appearance of the machine. Obviously, too, they must be appropriate to the occasion, and combine good taste with that suggestion of chicness that is so dear to the woman of today.

In solving this highly interesting problem of clothes, the shops have

"gone to the limit." Consequently a bewildering array of fascinating togethery is spread before our eyes inviting our selection.

Cape Dominates

The dominating feature this season is the cape. It is seen in all sorts of materials and all sorts of styles. The cape costume—consisting of a one piece dress and a cape thrown over it—is one of the most popular

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Again the cape—but this time it is stunningly worked out in French blanket cloth with a collar of white caracul. Milady snuggles into the warm protection of this wrap, and defies the breezes that creep into the tonneau.

A trim little suit of imported tweed in tan, brown or blue. A bright colored silk scarf adds a right touch. Very appropriate for motoring is the fuzzy little hat of angora and straw—soft and crushable.



Miss Sadie Mullen, who played in "Jane Eyre," wears this chic costume of striped tweed. The interesting features are the throw-scarf collar on the cape, and the clever use of fringe.



ROMANCE OF A VOITURETTE

Amenities of Motoring in Malay Jungles Twenty Years Ago

By EDWARD A. MORPHY



A chariot of twenty years ago boasting $4\frac{1}{2}$ horsepower.

CIRCUMSTANCES had brought me to Kuala Lumpur, a city of great hospitality and entertainment, and the capital of the Federated Malay States.

High festival was raging; flags waved everywhere; Sultans, Unkus, Pangerans, Penghulus, rulers and nobles of every degree blocked the thoroughfares with their retinues. In the easy parlance of the hour, you couldn't swing a cat without hitting a king.

Under the cooling punkahs of the "Spotted Dog," otherwise the Selangor Club, planters, officials and business men foregathered in the genial merriment of their kind and class. Men were there from the far jungles of the Ulu, from the larger settlements, from Singapore, Perak, Seremban, Malacca and Penang. Conforming to the spirit of the place and the occasion, everybody's back teeth were awash.

To me came Alphonse, the Frenchman, forgetting in the enthusiasm of the surroundings the circumstance that kissing on both cheeks by male acquaintances is not an idiosyncrasy of the Anglo-Saxon race.

"This," said he, "is a pleasure wholly ravishing. It is my joy that I will give you an adventure at which your eyes will scintillate and your soul explode with its delight!"

With an ineffable gesture, he signalled to the intelligent *tambi* for two more stengahs—the inevitable Scotch

highballs of Malaya—and raced ahead with an account of the nice things he had in store for me.

"It is," he explained, "the automobile."

"Ah! I see you sympathetic! The automobile that goes, perchoof! It is the ecstasy. I take you. We volley forth. We ride like hurricanes. Through jungles, through mountains, through everywhere we go until, poof! she bursts. She always bursts! Then we come back."

"How? you say; how come back?—My friend, the good God knows! What is it the Bible tells about the little sparrow on the housetop, that he shall not tumble down! Is it not so also with you and me?"

"Holla! Tambi! Encore deux! Parbleu! I speak wrong—*Dua Stengah*—two the stengahs!"

'Twas Twenty Years Ago

Gentle reader, bear in mind that this was in Malaya twenty years ago, within a stone's throw of the equator, you might say, in a country larger than California, unpeopled and practically unexplored, with at best a hundred miles or so of railway, on which no trains could run at night because elephants and rhinoceroses might get tangled up with them in the darkness.

Also bear in mind that the automobile was not the Rolls Royce or the Buick of this effete age, but the infant groping for the light, the contraption

—well, kindly see the photographs of a few that, at the time when these things came to pass, were the pride of their fortunate owners in that particular corner of Asia.

The afternoon of that happy day was taken up with the durbar of the kings and the captains; and the nights and days thereafter, for nearly a week, were with attendant glories filled.

During that period, however, it was my precious privilege to be shown many wonderful machines that had been acquired, regardless of expense, by certain friends and acquaintances of mine in the prosperous city, and to receive photographs of a few that I cherish preciously as souvenirs.

Each particular car was a gem in its way, each the *dernier cri* in its own particular fashion. A Chinaman, the Towkay Loke Yew, owned the finest of the lot. He was, by the way, the first individual to own a car in the Native States. Loke Yew had migrated to Malaya, as a coolie, in the later seventies of the last century, but at the period of the great durbar he was enormously rich and the leading patron of the budding automobile industry.

When he passed to his reward about ten years ago, he left twenty cars behind him, a knighthood, and \$15,000,000.

None Could Go

The only fault that the most capacious critic could find with any of these expensive vehicles at that period was that none of them could go. Therein my Frenchman's car held an enviable supremacy. But he was a very gifted engineer and an expert mechanic, and had mastered the intricacies of the new science of automobilism with the object of retrieving in the Purple Orient fortunes badly battered in other fields of endeavor.

His car was what he called a De Dion-Bouton voiturette, and it boasted $4\frac{1}{2}$ horsepower. It made a noise like a battery of pom-pom guns in action, and had other merits of a high order. Like most other cars then existing in the tropics, it had an open body with a canopy of white canvas, neatly fringed on the sides, to protect the passengers from the sun.

People get up early in Malaya. It was not yet 6 o'clock when I arrived at my friend's bungalow on the morning of my first adventure in an automobile.

My own particular host had bid me a fond farewell as we parted, though

I was leaving my "boy" and my baggage at his abode on the assumption that I would be welcome when I returned that afternoon.

"It's all right, old man," he assured me, "I'll pay off your boy, if he wants to go back to Singapore. If he'll stay, I'll keep him myself. We'll see you get a nice obituary in the Malay Mail, and I'll send a copy of it home to your people."

My "boy" was a middle aged Chinaman, an ex-pirate, who had come into my service, directly from jail, a couple of years before, and had developed into one of the best servants in the country.

It was my host's expressed conviction that once I sallied forth adventuring with Alphonse, our Frenchman, I would never see that boy again.

Alphonse greeted me gaily. He was one of those dark-visaged thick-set Frenchmen, with a dense but closely cropped black beard that grew all over his face, and scratched like a nutmeg grater when he sought to embrace you. He was a great favorite with the ladies, and made no attempt to escape their blandishments.

"My Marmaduke! my Marmaduke!" he hailed me as I went up the steps of the verandah, "I knew you would not fail me! Behold! All is ready. We will go a thousand miles!"

His boy came out with the conventional refreshments, the ice tinkling graciously in the glasses. On the red laterite road below stood the car, scarlet, beautiful, alluring as a siren in the bright sunshine. Two great picnic baskets, rambongs of Chinese fashioning, were strapped to the sides. Behind was slung a jute sack, also of Chinese make. It was just such a sack as those wherein, a few years before, the Chinese deputies of the Capitan-China used to carry the heads of whatever malefactors they had slain in the jungle to the open square of the market place, and receive for each such head two silver dollars, equal to \$1, United States currency.

The sack that swung behind Alphonse's car looked as if it contained half a dozen such heads freshly gathered. Sluggish red drops were trickling from it. In response to my look of inquiry, he reassured me.

"Ice, my friend,—only ice. The day is long, the sun is hot. No ice grows in the Ulu. It is the stain of the sack and the sawdust that makes the drops look red."

The Ulu is the jungle. Beyond the narrow pale of the settlement, all is jungle in Malaya. Often the jungle is the boundary of the city garden. Save where the plantations are, or the mines, or where a few scant patches ofalang grass illumine the forest, or

rice-covered valleys are smiling near the sea, all is jungle in the heart of Malaya.

To Kuala Lipis

"We will think we are going to Kuala Lipis," explained Alphonse. "It is thinkable. Men have been to Kuala Lipis, but never in an automobile."

Kuala Lipis was all the same to me as Ultima Thule, or anywhere else for that matter. Vaguely I recalled that it was somewhere east and north of us, in the unexplored state of Pahang. Between us and Pahang lay all of the Ulu Selangor. The famous Raub gold mines were also somewhere in that direction, and I was slightly interested in Raubs.

I mentioned the fact to Alphonse.

"But yes," he agreed. "Raub is on the way. I feel the spirit of good fortune in my soul today. We may even get to Raub. It is only 95 miles."

"And Lipis?" I queried.

"Ah, my Marmaduke! That is the spirit! You aim your wagon at the star, is it not? You believe we shall see Lipis! It is more as 130, maybe 140 miles."

We went down to the car, and he started cranking her. Explosions shook Kuala Lumpur. A flock of squawking cross-bills flew screaming from an adjacent tree. Shrieks rang out down the road as an ox cart, drawn by two great wallowing water buffaloes, turned on one wheel and crashed into the jungle.

Alphonse beamed triumphantly and jumped into the car beside me. The steering wheel was on the right.

"We are gone! We are gone!" he bellowed above the clamor of the engine.

He pulled some lever, pushed an-

other, the machine jerked angrily. We went.

Never before had I been in a moving automobile. The sensation was rapturous, divine.

No Reverse Gear

Onward, ever onward, we sped. There was no dream of going otherwise, because that brand of De Dion had no reverse gear. Probably none had then been invented. But it had two speeds; one slow and appalling in its ructions, the other swift, and not so appalling. In the bright lexicon of motoring, at that period, there was no such word as "high."

For about five minutes—minutes that felt like years—we traversed the busier thoroughfares of city and suburbs, where carts and wagons, rickshas, men, women, and children, fled from the terror of the scarlet thunderer and hurled curses in her wake. Then we hit the clearer road, red, smooth, restful to look upon—and so on towards Rawang, Kuala Kubu, Raub and Pahang.

Britain was conquered by the Romans nearly 1,900 years ago; and the Romans—the greatest colonists the world knew before the development of the British Empire, long centuries thereafter—taught the English the incomparable usefulness of good roads. Wherever the British rule obtains, in new countries, the building of roads is its first mark of conquest.

The road we traveled that morning through the jungles of Selangor towards Pahang was better than the best that could then be found in any country district of America.

The car, as well as I can recall the details, had pneumatic tires on the



The pride of Lake Yew.

front wheels and solid tires on the rear. The row it made, and the quivering, apart, it ran as smoothly as over a modern state highway.

The laterite with which the road was faced is a softish stuff, red through its iron content, and as restful to the eye as green verdure. The showers of the preceding night had left it so that one could recognize the tracks of every animal that had crossed it or passed along: the broad hoof of a water buffalo, the smaller hoof of a bullock, the spreading pad of a tiger, the tiny little prods of Plandok, the mouse-deer.

On we went, the cool breeze in our faces. Into the jungle where great trees rose in cloistering arches overhead, with drooping rattans and other endless, trailing lianes hanging down in festoons of inimitable tracery. Enormous clumps of antler ferns bulged out from the trunks of forest monarchs as tall as redwoods but of lesser girth. In places there were avenues where, from nearly all the trees, hung glistening sprays of moon orchids from which were falling, like lazy snowflakes, white petals that had unfolded only the night before.

"This," said Alphonse, "is magnificent! It will be more magnificent! Behold!"

We snorted out of the everglades on to a road that gradually became but a shelf hanging to the side of a mountain.

"It is now the climb," explained Alphonse, "Excelsior!—Magnificent!"

It was.

"If only——," proceeded Alphonse. "Bang!"

Above the uproar to which the ear had grown accustomed, a new and more terrible note smote upwards, outwards and downwards from the bowels of the machine.

Alphonse seemed to pull or stamp upon every lever in the car. It stopped.

Almost instantly it began to go backwards.

Alphonse pulled the brake lever, and it stopped again.

"If only," I said, my friend," he repeated, smiling merrily. "Behold, you now see the 'if'!"

Far Below Lay Asia

Far below us lay Asia. Trees were poking up from the depths of the peninsula, looking like pins in the abyss.

"Be not alarmed," said Alphonse. "This is not the burst. This is only the bang. It is as nothing. Quickly we can repair."

From some recess in the body of the car behind the seat he drew forth an axe and a large tin box of tools.

He handed me the axe.

"It is for you," he said. "In the great goodness of Providence it may be

ordained that you need not use it. But, my friend, if Heaven is unkind, I know you will assist."

I accepted the axe with grave misgivings. It was an axe wherewith I could imagine a De Dion-Bouton voiturette could easily be destroyed. But why should I, the untutored guest, be asked to destroy it?

Alphonse soothed my uneasiness.

"Perhaps we must lift her up a little," he explained. "If so, with the axe you shall cut down the strong bough for the lever and the fork for the fulcrum, and, hola! she is lifted without the fatigue."

"But, my friend, let us not tempt the fates! First, let us pour the libation of assuagement to the cross divinities. There is the vermuth, the absinthe and the Dubonnet, if you would pour the aperatif to your especial deity. For me, I think in these Olympian heights and fastnesses the Gods prefer the aroma of your whiskey Scotch. Eh?"

So we got out by the roadside and unlimbered the sack of ice and otherwise propitiated the tutelary deities of that mountain.

Thereafter Alphonse opened the tin box that weighed heavily, and exposed the entrails of the car, such as they were. It is my remembrance that there was but one cylinder, and a messy wet battery, and a jumble of other things outside the pale of my philosophy.

But a Trifle, a Jest!

"Ah-la-lah! Ah-la-lah!" sang Alphonse as he dipped into the maelstrom of it. "I told you it was but a bang,—a trifle, a jest! Put up that axe. She shall not demand to be lifted. All is beautiful! Magnificent!"

Singing more ah-la-la-lahs and trala-la-lahs, he knocked with a hammer here, twisted with a wrench there, muttered and spluttered a bit; then, shockingly dirty as to his hands and sleeves, beamed upon me radiantly and besought another drink.

"Now again we resume our happy voyage!" he chortled, when we had repacked the hamper and the ice bag.

"I will make the turning of the crank. We will place her on the slow gear,—So. It is a mountain we ascend. Therefore she may have the agony at starting. We shall relieve the agony. You will go behind. When she go with the noise, I will hop inside. You will push! Then when truly she goes, you will run after and hop in! Is it not so? You are young; you are as the feather. You can hop!"

And that was what we did.

Fortunately, the slower gait of the voiturette was about that of a normal milch cow at pasture. She was easy to overtake. Many times thereafter be-

fore the hour of noon I thanked heaven for that stately sedateness of our equipage in her second paces.

It was always on the up grades that she went wrong. The road, as we progressed, became like a scenic railway of the Coney Island type in its ups and downs.

The downs we seemed to overcome on the old-fashioned coasting or toboggan principle. The ups—Well, the "ups" were mostly my "downs."—Push, trot, and hop in. Stop, tinker, refresh, push, trot, and hop in again. And so along, as we surmounted one hill after the other.

Traveled On Nobly

On the level we traveled nobly, and the car seemed to understand that whatever little tricks it might play in the lonely places it had to preserve the "face" and dignity of the Tuans in the haunts of all Chinese, Klings and native Malays.

Thus we clanked and snorted through various small *kampongs* and villages. Thus we stormed through Rawang; thus through Serendah. Thereabouts we seemed to be crossing a river a minute and mountains rose everywhere. But, though the grades were stiff in places, the road was good.

We whizzed around one hairpin curve on a down grade.

"Sacré!" yelled Alphonse.

For an instant I felt as if I had swallowed my mouth. Certainly my heart plugged my throat for two seconds as I gripped the side and back rail of the seat.

Shrieks of unmentionable terror and agony rent the welkin. Avalanches seemed to pour over and tear at the white canopy of the car. Demons sprang through the car, scratching and squealing. Two horrid bumps jarred us. On sped the car.

"It is to go! It is to go!" gasped Alphonse. "Angel! do not burst!"

We were on a steep down grade.

"Heavens!" I ejaculated. "We will burst!"

"Better burst!—Far better burst!" said Alphonse. "Monkeys! Monkeys, my friend! We have made of them the ragout—the hash. There are enough of them to tear us into chiffons—Small rags, my friend! The smallest of small rags!—It is to go! It is to go!"

I glanced behind apprehensively. Three or four monkeys were scampering in our wake. A crowd of others blocked the road where we had bumped. That was the ragout—the hash.

It was terrible to think about; for monkeys are so frightfully human in many ways.

"It Is the Sadness"

We rounded the next hairpin on two wheels. Alphonse was very silent.

I looked behind again. No monkeys were in sight. I told Alphonse that we had outstripped our pursuers. He shook his head and sighed.

"It is the sadness," he explained. "My heart is bleeding. Never before have I made of monkeys the hash. It is the bad luck, the unhappy omen. I grieve for you, my friend, because I feel that we will most assuredly on this day burst."

"In the circumstances, Alphonse," said I, "It might be well if we fortified ourselves in advance. Truth to tell I feel shaken by our experience. Would it be well to stop?"

"No," replied Alphonse, "not until we arrive at the foot of the grade. Then she will stop of her own accord. She now proceeds under the joint influences of inertia and gravity. Nothing else impels her. That jingle you hear is the gear chain trailing. My friend; this time you must use the axe."

This information greatly depressed me for the moment. But Alphonse explained that the chain gear broke so often that he could mend it with his eyes shut, and he had an extra chain, anyhow, as well as repair links. I was assimilating this comfort as the car calmly came to a standstill on a shady strip of road, beyond which, in an open space, were millions of blue butterflies.

Woodcraft is outside my normal sphere of endeavor; but there was little difficulty in felling the saplings that were to serve as lever and fulcrum in lieu of the now orthodox screw-jack. Nevertheless, before the required gear was fashioned and the car balanced neatly on the uprights so that Alphonse could make the necessary repairs, I was more than glad over the plentitude of our commissariat.

It was a good hour before the task was done. In all that time we saw no living thing but the blue butterflies.

The solitude struck me as peculiar, because this was the high road from Selangor to Pahang, and there should be some traffic of bullock and buffalo wagons. We had encountered none so far.

I asked Alphonse why it was so quiet.

"Providence, my Marmaduke," he explained. "Providence keeps the road clear so that there may be no hash other than that of monkeys. Perhaps also the kings have declared a general holiday because of the durbar at Kuala Lumpur. It is a way they have up in these parts."

That sounded all right.

Off on the Fourth Essay

Again we essayed to start. The voiturette seemed lazy. Three times we cranked, three times Alphonse abandoned that line of effort and es-

sayed more tinkering. On the fourth essay, however, we got off splendidly, and, as I ran after her and hopped into my place, Alphonse put her at full speed again, and we thundered along uproariously.

Thus in due season we reached the little town of Kuala Kubu, where there is a government rest house at which we decided to take our luncheon.

It was near there that an argus pheasant flashed across the road right in front of us, and soared down the depths on our left like a streak of fire.

"Such a bird! Such a pheasant!" ejaculated Alphonse in ecstasy. "My Marmaduke, what visions he recalls."

"You have loved, too—loved the pate de faisan de Strassbourg! Alas, I have none here today. But there is the true and blue and only adorable terrine that also comes from Strassbourg—the pate de foies gras aux truffles de Perigord."

"Heaven! my Marmaduke! we will eat it within the hour. Let us dream of it in advance! Can you not see in your mind's eye those geese in the market place, too fat to waddle; all liver, all delight! And the black lumps of truffles commingling among the livers!"

"Marmaduke, look below at that jungle and think it is the forests of Perigord. And do you see those five black dots among the brighter emeralds of the wild banana patch? Those are wild elephants. What do they look like from here? Ah, my Marmaduke, bid my heart keep still! Hast never seen the precious and perfect truffle pigs—the black ones—rooting among the forests of Perigord? Canst thou not conjure those elephants into

such dreams of delight—grunting sows, dark and long-snouted, rooting like fairies in the shadows of the oak trees?—Marmaduke, my Marmaduke, has this world aught so heavenly as those truffle-questioning sows of Perigord?"

And, truth to tell, the great blue terrine of pate de foies gras that we tackled, and finished, at the Kuala Kubu Rest House contained slices of truffle that would have canonized any sow of Perigord were sainthood among swine to be acquired by any such achievement as rescuing from oblivion delicacies so sublime.

By the time we left Kuala Kubu to climb the Semangko Pass, otherwise the Gap, that leads through the mountain range from the State of Selangor to the State of Pahang, we had forgotten all about the catastrophe of the monkeys.

Not for Nervous People

The road is extremely beautiful but, as described in modern travel guides for automobilists, "The trip is not recommended for nervous people. Brakes should be examined before starting, and on descending the grade, the car should be kept well in hand."

All I particularly noticed was the onerous difficulty of pushing the voiturette into a start as often as we suffered a "bang" on the up-grade, and also the continued lonesomeness of the thoroughfare. We passed nothing but pedestrians, Malays, Indians or Chinamen; and these were few and far between.

After a long, long time, as it seemed to me, and many wearying halts and starts, we came to a spur around which

(Continued on page 40)



The first 8-horsepower Albion in the Federated Malay States.

SUMMER ON THE CALIFORNIA TROUT STREAMS

Wherein an Expert Gives Advice to the Sons of Walton

By ROBERT PAGE LINCOLN

Associate Editor of "Rod and Gun in Canada"

TROUT fishing California has in plenty, with the added attraction of picturesqueness afforded by cool valleys, and overlooked by towering mountains. There is a wide variety to choose from; and that the sport is of the very best is annually attested by the experiences of thousands of the sons of Walton who hie them away for a try at the big fellows. They generally come back with what they went for, and some memories, too, that are enlivened with bright lights that are prone to linger long in the consciousness; on the other hand, it is doubtful if such memories ever pass out of one's hoard of recollections. It is the pride of California to know that it has a native trout that has gone down to fame, and has taken up its home in practically every quarter of the world. Just how many of the people of the Sunny State are aware of this I do not know, but that brilliant clan, the California league of fly-rod men, are in understanding of it. The fish I have reference to is the rainbow trout (*Salmo irideus*), the most noble finny fighter that ever seized an artificial fly and made a leaping, dazzling flight through the waters. In the Eastern section of the country men speak volumes about the speckled brook trout, though each and every one of them end up, at some time or another, by telling of the fight that the rainbow trout puts up when captured. As an introduction into other waters, the native Californian, rainbow trout, has proven himself well able to take care of himself and to perpetuate his kind for the benefit of anglers. The rainbow trout is now found in the waters of the British Isles, in France, Germany and Russia. Exceptionally good rainbow trout fishing is to be had in the many rivers of South Africa. Anglers have written enthusiastically of fishing for *Salmo irideus* in the streams of New Zealand. In our own country the rainbow trout has had a wide distribution. Knee deep in the waters of Michigan and Wisconsin streams I have played this fighter—the pride of California; reared at the foot of the snow-capped mountains, in the heart of the Sierras. In the rage that swept the Eastern States over speckled brook trout fishing, a condition has arisen where practically every stream has been sapped of its spotted beauties. Where to turn for a replenisher? The rain-

bow trout is always the happy solution. There is not a properly fitted trout stream that will not do for the rainbow trout. It grows fast. It fights well.

But it seems that only in the shadow of their beloved mountain home (as in the Sierras) do the rainbow trout give



A "safe landing."

a befitting example of their sprightly dash and pugnaciousness. One who has tested the fighting leap and flight of a rainbow trout, in its own particular native waters, in the mountains, and has tested a fish of the same species in Eastern waters at once knows the difference. Still flowing, often quite warm, and often discolored streams (which the rainbow trout has been introduced into in the East) produce a slow-moving fish with little fight in him. Such fish speedily degenerate into gluttons, and keep themselves in the pools. Many of these hulking fellows finally get to hugging the bottom and rarely come to the surface to take a fly.

Mountain Rainbow Different

How different the mountain rainbow! Unused to warm water, like the brook trout, he demands the sweet, cold water. By reason of the swiftness of the mountain stream he has a vigorous "kick" to his tail. His fins are superlatively strong for breasting those crystal currents. When he takes your artificial

fly he does not lazily rise to the surface to suck it in, but snaps it. A moment later he will turn a double or triple somersault and the fight is on. 'Ware of that light tackle! He is a match for you. Back and forth he will race from one edge of the stream to the other. He is cunning, too, and knows every log and obstruction in the stream. He will (if you do not watch out) snag your leader on a convenient boulder and there will be nothing left but the fragrant memory of what might have been. The mountain rainbow is a high flyer, with the guarantee of game-ness linked with his name. It recalls the brilliant words of Charles Frederick Holder: "How that rainbow came at me; how it went repeatedly into the air; how I nearly fell overboard, are matters of personal history, and need not be dwelt upon; but for the first few seconds that living rainbow, which went pirouetting over the little river on its tail, throwing impossible aerial swings and leaps, filled a space in my imagination. Again and again the rainbow leaped, a silvery radiance flashing in the sunlight, dropping back to dash about the boat, to come in with a rush, faster than I could reel. * * *

"You have, perhaps, never seen a big rainbow fresh from the icy pools of its choice. Know, then, that this fish, this seven-pounder which I held upon the scales, was a thing of beauty, a joy forever beyond dispute. Its back was well sprinkled with ocelot-like black spots; the color a deep green, the lower surface silver, while over all seemed drawn a filmy gauze of old-rose fabric, of inexpressible delicacy and beauty, which was intensified along the median line in a band of pink and rose and other tints that produced all the colors of the rainbow, for truth, and gave this radiant creature rank among the birds of brilliant plumage."

Holder wrote of the large rainbow trout to be taken in the lakes and streams of Northern California and Southern Oregon. How skillful was this great California angling writer in telling the beauty of fishes, and the fascination in taking them? No one has equaled his efforts at word painting with black upon white.

When one speaks of rainbow trout in California one instinctively thinks of the Kern River, which finds its birth in the high Sierras. The waters from Mount Whitney pour into that

beautiful stream, "a great, clear, green, swift stream, among the granite rocks, its waters slipping along like oil; a river with rippling shallows and deep, cold eddies, the perfect home of the trout." The Kern River is famed among anglers the world over. When anglers meet it is always: "Have you ever fished the Kern, of California?" If you have fished the Kern you are the center of a curious throng of interested listeners. Especially does the Kern River interest anglers in that some of the tributaries from Mount Whitney contain a trout that is one of the gentle wonders of this planet. I refer to the so-called golden trout. Professor Gilbert brought out the first specimens of this fish for identification. David Starr Jordan designated the fish *Salmo gilberti*. That was some twenty years ago. The fish was brought from Soda Springs on the south fork of the Kern River. Later the isolated golden trout of Volcano Creek were designated as a species apart from the others, the scientific term being given them (*Salmo aquabonita*). This name was derived from the waterfall that separates the Volcano Creek from the rest of the world—that is, as far as coming and going concerns this trout. There are, scientifically, three species of the so-called golden trout in the Mount Whitney waters; overcast in gold, the fins tinted in the purest orange with a nicely brushed-in orange colored stripe along the median line. The golden trout are an offshoot of the rainbow trout; merely that changed environments have wrought a subtle transformation in their coloration, for the pigment cells of a trout are very sensitive to taking on a new coloration. If a stream bottom be of sand and gravel, and very bright, the fish attains to a silvery coloration. The golden trout owe their coloration to the color of the bottom of the stream they live in. "The rocks over which these streams flow," says Jordan, "are of bright granite and quartzite, gray and red. It is supposed that the color is protective, for the fish are colored like the bottom. To a bird looking into the stream, the deception is perfect. It is supposed (though no one knows) that the colors have been attained through natural selection. The redder the fish, the better its chance to escape the fishhawk and eagle. If this is not the cause of the color, no one can guess any other, and to escape its enemies through resemblance to natural objects is not a trait of the fish alone, but of hundreds of other creatures in these and other mountains. But whatever the cause, nothing in nature is more beautiful or more graceful than a golden trout, alive in these clear, icy, sunlit waters."

Trout of High Altitudes

The golden trout are trout of the high altitudes. Such trout rarely grow to length and breadth and weight. One rarely catches a true golden trout much over three-quarters of a pound in weight. They rarely go over twelve inches in length; a ten-incher may be taken as a large one. They attain to maturity at a length of about eight inches. Sadly, they are unwise, being so far removed from man, and they take the fly with a dash and at the first cast that leads many a fish hog to catch ten times more than he should. Quieter stretches of water (as where it flows through the meadows) provide good fishing. The trout angler will find joy in taking a very few of these exceptional fishes and enjoy the thought that he is in a region that, for beauty, it is hard to equal.

Unknown to many, the size of the stream, the river or the lake that a rainbow trout is found in has its effect upon the size of the fish. The reason of this is twofold: first, the size of the stream; second, the smaller amount of food that it produces. It is for this reason that the rainbow trout often mature when they are six inches in length, in the streams of the high altitudes. They will ravenously seize the artificial fly, believing it food, for there is a scarcity of it, and therefore its attractiveness is instantaneous. In the slightly larger streams the rainbow trout attain to weights of about two or three pounds. In still deeper streams and large pools four-pounders are not uncommon. The Kern, the Kings and the Merced rivers are representative rainbow streams. In the lakes (as in Kern Lake) the rainbow trout reaches to a weight of eight pounds. In the Klamath Lakes rainbow trout have been taken as high as twenty-five pounds in weight. The ocean-running rainbows are large; they are salmon-like fellows. They feed heavily in the ocean and thus attain often gigantic weights. In the ocean their beautiful fresh-water coloration fades and they become silvery in coloration. They generally come up to the coast rivers in the month of March to spawn.

Summer on the California trout streams is one of joy unending and success in due measure. Nevertheless, it is strange what a falling off occurs in the number of anglers who visit the streams in the latter part of July and August. Opening days are always attended by outward moving delegations of anglers; and the streams are thickly peopled. Later on, however, they dwindle down to twos and threes—and the streams are left to themselves. A certain number of these sons of Walton know that the best fishing occurs when the heats of summer lower

on the earth, for it is then the mountain waters yield up their fairest specimens. Those secluded pools are then veritable treasure places and bear a careful looking into; it takes skill and the correct lure, but the wise angler is never wanting in fitting perfectly into the situation. Live bait, spinners and artificial flies are used. The live-bait man knows that the grasshopper is a telling lure what time the July sun is gilding the heavens and is never to be found near to the waters then without a box of them. How to use them on the hook without impaling them? Simply procure some of the smallest druggist rubber snaps. Take a sufficient number of turns of the rubber around the hook, bend and then insert the hopper in the loop. Helgramite are attached to the hook in the same manner and they will still be as alive as ever. The druggist rubber snap is a bait saver, and no mistake. One may catch fifty trout (if it so be) on a helgramite, attached to the hook with a snap, and at the end of the day's fishing it will be as active as ever. The larvae of the Dobson fly (which is the helgramite) are only too well known to the live-bait fisher. They are those wicked looking creatures one finds in the streams upon turning up stones. They have a series of pincers on each side, though they are more savage in appearance than in actual combat. It has been said that when all else in the line of bait fails, the helgramite, the grasshopper and the angleworm will win.

"Working for Trout"

And there is method in the skillful use of the angleworm, too. In fact there is an art, in itself, to "working for trout," as it is called. Your chuck-and-chance-it, live-bait fisherman will hook on a great gob of worms; will start it at the head of a pool and will let it tumble, haphazard down with the current, rolling over the bottom of the stream. Some rainbows may see it, and take it, no doubt, but not the fish you are looking for. The true sportsmanlike method of worming for trout consists in connecting a bare hook to a spinner—a No. 1 or 2 spinner will do nicely. To this bare hook the worm is attached so that it will trail in the water. Instead of driving the hook throughout the worm, it is hooked just under its skin. It requires some little art to cast this—in fact, it is not a cast at all, but is allowed to play out in the water. The spinner will whirl, throwing off a silvery ray, and the long, trailing worm will have a snaky, wavering motion in the water that proves instantly attractive. Move this into some suspicious looking mountain pool and if there is a large rainbow trout there he will be interested in sampling your offering, be it feeding time or no. It is hard, in the finny world, to refuse

an angletworm that trails so subtly and enticingly in the water.

However, the safest and most certain method in using the angletworm for a lure goes as follows, and has never been known to fail at getting the fish that strikes: A No. 10 is slipped on to a leader and is tied to the leader one and one-half inches from the end of it. The hook should not stand out from the leader; rather the hook shank should lie along the leader. This done, a second hook is tied on to the leader at the end, to be the lead hook, the front hook, so to speak. Now the worm is connected to this affair, the head of the worm being attached to the back hook, while the front hook is worked into the body. To all appearances when this is moved in the water the worm is free; this is especially true if you are using an invisible leader, of which there is at least one on the market. When a fish strikes this worm he will hook up either to the first or the second hook on the leader, or both. There is hardly a chance here of nipping off the end of the worm for the simple reason that there is a hook in it.

Fore-Fin for Bait

It seems strange, but nevertheless a fact: Trout will strike freely and well, it seems, at all times, on the fore-fin of a trout. Simply upon capturing a trout sever one of the fore-fins and attach it to the hook. Some of the largest rainbow trout in the mountains will take the fin viciously when even the succulent grasshopper fails. This fact may be known to some anglers, but it is as one in ten. The same is true of a little white strip cut from the belly of one of your trout, about two inches long and one-half inch wide at the butt end. Attach this to the hook at its tip and play it to the current. If the current is strong, one will need to place several split-shots on the leader to sink it. Then let out line. Let it flow downstream. Seventy-five, one hundred, one hundred and fifty feet, perhaps. Down it goes, moving in and out of the pools. Suddenly a large fellow beside a boulder will seize it and the fun begins. These methods win when the fish are weak on surface feeding, and are closer to the bottom; and this often happens. Do not forget the fore-fin or the belly-fin of the trout as a lure. Many are not aware of it, but the artificial fly known as the *Parmachenee Belle*, was made in imi-

tation of the belly-fin of a trout. Think of it; instead of imitating an insect (as many suppose it should) it is an imitation of the belly-fin of a trout. Could anything be more incongruous? Yet it was such a valuable hint that the inventor (a great angler) made a fly to represent it. The July and August angler in the mountain pools should give this his careful attention.

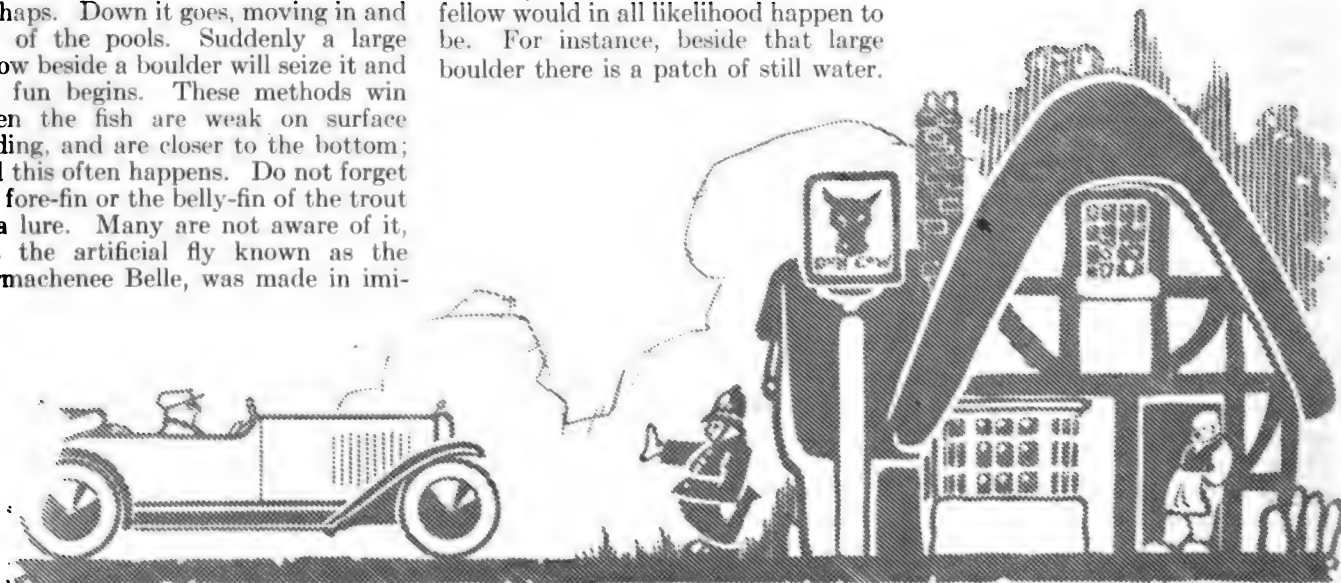
It has been said that there are times in July and August when the angler is not able to "rise" a fish; that the fish do not even seem to do any surface feeding. Naturally, the best fishing goes on when the fish are rising to the top for insects, as when a hatch of insects is on and they are rising from the bottom of the stream. The higher one goes up in the mountains the fewer, it appears, become the true stream insects. The angler must needs use art in collaboration with some true study to make some appreciable catches. Mountain trout may be uncertain fellows. Having had poor luck (if any) with a small fly, he may shift to a rather large fly (even a bass fly) and immediately rise a large fellow and make the best catch of the season. The trouble with the ill luck of many anglers is that they give no time to experimentation. They place their luck with one variety or color of fly, or one size of fly, and remain at that, without trying anything else. There is another extreme to this in that many fly fishermen are constantly changing flies and using one but five minutes before another shift is made. The result is that no fly is given a true tryout. Again there is a hint learned from experience: One cast well judged and well placed is worth ten indifferent casts that have been poorly placed. The difference is that the well-placed cast is the one that brings success; the poor casts, ill judged, are so much waste of time. Study every nook and cranny of the stream you are to cast over. Don't make a cast till you have mentally made note of where a large fellow would in all likelihood happen to be. For instance, beside that large boulder there is a patch of still water.

If you can make a cast so that your fly, or flies, will fall on the boulder you will craftily pull them off the boulder—and in the most natural manner they will fall to the still patch of water. Deceived, believing the artificial flies true insects, that large and dazzling rainbow will rise and take the offering. Or here is a semidark place under a sedgy bank. There is a still place there. A trout should be lurking in that nook. Or here is a log in the water. Try your bait or fly alongside of that, seeing to it, always, that your fly falls first, not the line and leader first. Poor casting, I firmly believe, has only one result, that being: Ill luck!

The Salmon-Egg Contingent

During the fore part of the season a great number of anglers go out, but they are live-bait users almost entirely. The salmon-egg contingent, the dyed-in-the-wool fly fisherman calls them—and the true fly fisherman can be counted on to eschew the streams till the inimitable July and August days arrive. Then he goes happily forth into the mountain stillnesses.

There is a reason, too. The early fisherman had to contend with high and swift water which was mostly discolored. It was the using of live bait entirely, for the stream insects were not hatching, so that the trout could be deceived by artificial counterparts. Now, however, the winged life is abroad; the fly fisherman is in his element. As the warmer days come on, the water in the lower reaches of the rivers disappears or becomes heated out, the fish gradually but surely make for the upper pools, and thence follow the fly fishermen. It is riotous travel at times; the road is rough. Sometimes there are no roads and one makes his own paths at will. But there is a reward among the cools of the upper valleys and natural parks where Nature in all her untrimmed and majestic glory contrives to make California the true Arcadia of the disciple of Walton.



AUTOMOBILE CLUB NEWS

\$795,000 Voted for Good Roads

The Good Roads Bureau of the California State Automobile Association actively promoted the successful campaign in Colusa County resulting in the voting of a good roads bond issue of \$795,000 on March 28th. Thus far the Association's Good Roads Bureau has fostered and actively managed county road campaigns resulting in the voting of \$17,000,000 for improved highways in Northern California counties in addition to its effective work for the three State bond issues.

Moving pictures showing the results of improved highways were used by Manager C. C. Cottrell of the C. S. A. A. Road Bureau in the campaign. Colusa County is now traversed by State highways north and south, and east and west. The bond issue just voted will provide the county with a system of connecting roads opening up a vast agricultural district.

Association Praised by Women's Clubs

The action of the California State Automobile Association in taking over the task of replacing and maintaining the mission bell signs along the El Camino Real in Northern California is being heartily commended. President George S. Forderer of the Association has received notice of a vote of thanks being extended the C. S. A. A. by the San Mateo County Federation, C. F. W. C. This organization represents the Burlingame Women's Club, San Mateo Women's Club, North Burlingame Women's Club, Colman Home Club, Redwood City Women's Club, South San Francisco Women's Club and several branches of the P. T. A. The letter of notification says:

"The women's clubs of this county realize what a factor your organization is in all of the big civic works taken up in this State and we are very appreciative of them. We can assure you of our co-operation wherever you find it necessary."

Bureau Expects Greatest Touring Season

The greatest influx of transcontinental motor tourists in the history of the West is predicted by the Touring Bureau of the California State Automobile Association for the 1922 touring season. The following reasons are given by Manager George S. Grant of the Bureau for this prediction: (1) Through new construction and temporary repairs the Lincoln and Victory Transcontinental Highways leading into Northern California through Nevada will be good, passable roads from Salt Lake City, the distributing point for transcontinental travel.

(2) The National Parks of California will reap the benefit in increased travel from recreational advertising campaigns, improved roads and trails, making more accessible points of interest to the tourist, as well as improved facilities for properly caring for park visitors.

(3) Production figures received from the various oil companies eliminate the possibility of a repetition of a gasoline shortage.

On the Victory Highway through Nevada, Boulder Flat, which has proved a bar to motor travel in the past,

has been eliminated and temporary repairs will make travel possible without difficulty or hardship. On the Lincoln Highway the completion of the Fallon Sink section will eliminate the main difficulty which has existed in the past on this route into Northern California.

With the opening of the touring season the Automobile Association will have added to its 30,000 signs now on the highways of Northern California approximately 10,000 additional road markers.

C. S. A. A. Secretary on Business in the East

With the object of conferring with the officials of the American Automobile Association, with which the California State Automobile Association is affiliated, D. E. Watkins, secretary and general manager of the C. S. A. A., is now in Washington, D. C. While in Washington Secretary Watkins will also interview various Government officials relative to legislative matters affecting the interests of California. Through its affiliation with the American Automobile Association the C. S. A. A. provides its members with national touring services and is able to exert a strong influence in Federal legislative matters. Secretary Watkins will return to California early this month.

Reward Offered for Arrest of Sign Mutilators

A reward of \$50.00 for information leading to the arrest and conviction of sign mutilators has been authorized by the Board of Directors of the California State Automobile Association. Each year the Association is forced to spend many thousands of dollars in replacing damaged signs. This year a vigorous campaign is planned to reduce this expense to a minimum. The co-operation of the United States Forestry Department has been obtained, and rangers have been instructed to co-operate in punishing persons found damaging road signs. Members of the Association are also urged to assist in the campaign. Where arrests are made the legal department of the Association will actively prosecute. Small signs announcing the reward are to be placed on the regulation C. S. A. A. road markers.

Hunting and Fishing Licenses at Branch Offices

In the interest of increased service to its members the California State Automobile Association will have on sale this year hunting and fishing licenses. The 1922 licenses will be available at the main headquarters in San Francisco and at the eleven district branch offices and seven touring bureaus now maintained in Northern California by the organization.

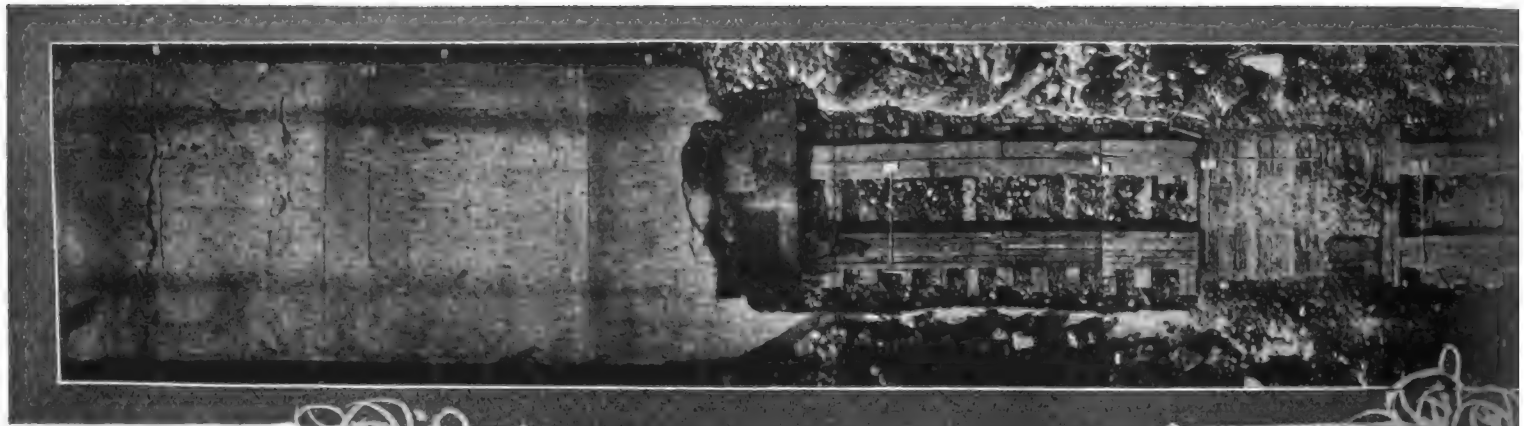
The fishing season this year is one month late, opening May 1st. The hunting season opens July 1st.

The cost of the fishing license is \$1.00 to a citizen of California, \$3.00 for a non-resident citizen and \$3.00 for an alien.

The hunting license is available at \$1.00 to a citizen; \$10.00 to a non-resident citizen; \$25.00 to an alien and \$10.00 for an alien who has taken out first papers.

WHAT THE CAMERA SAW AT T

These pictures were taken on the same day, after 3,668,100 tons (the equivalent



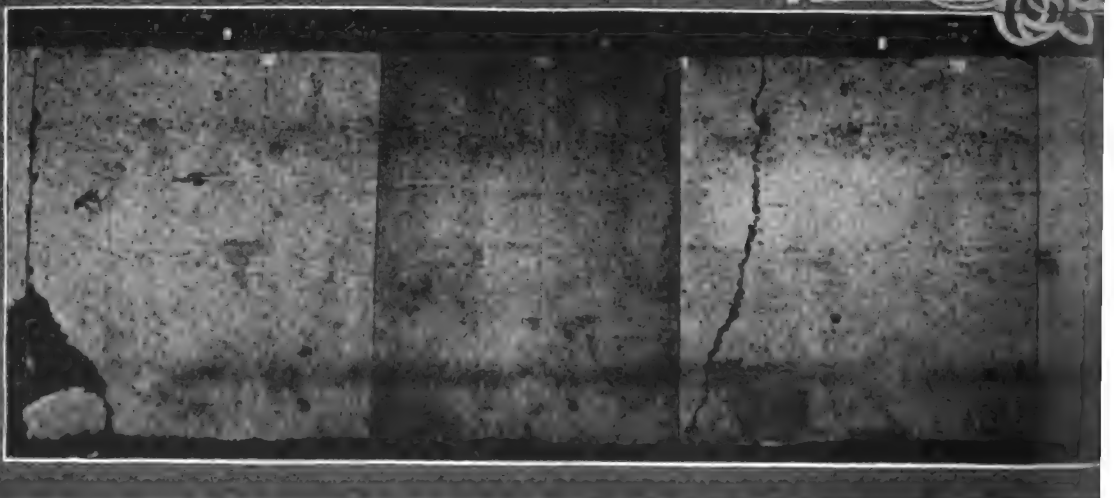
Section B

(California State Highway Commission Standard.) This is another section of 5-inch reinforced concrete; a type extensively laid in California.



Section J

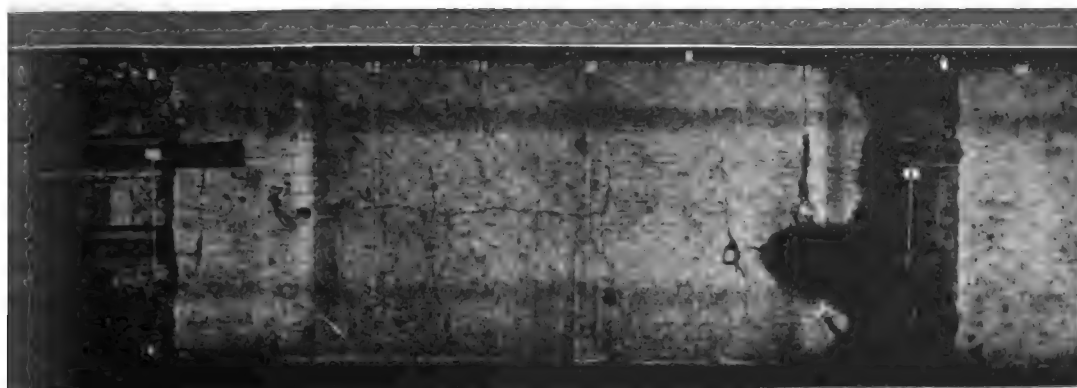
(The Arizona section.) This road is 6 inches thick—the type recommended for this State by the California State Automobile Association.



Photos by Hiller, San Francisco

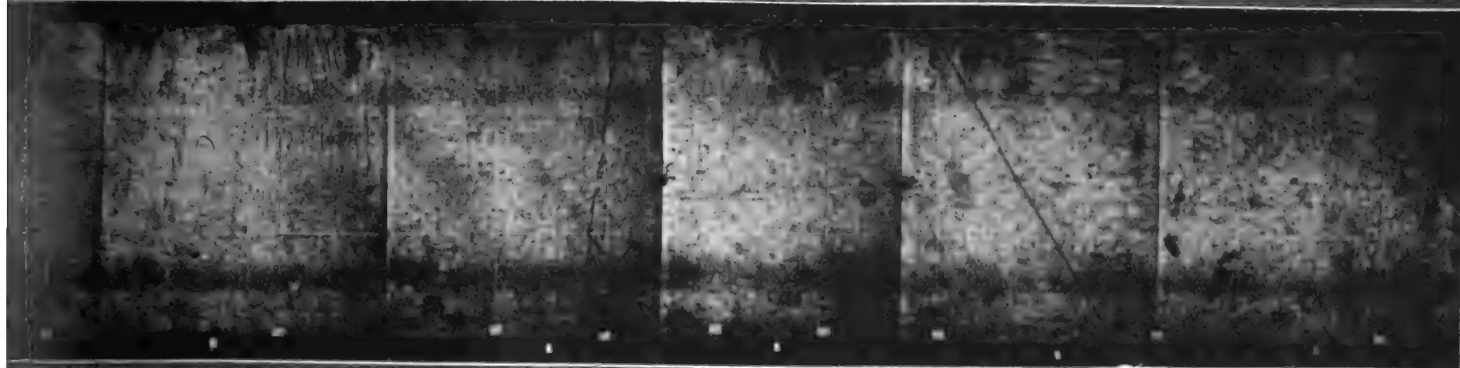
THE PITTSBURG HIGHWAY TEST

(10 years of normal traffic) had passed over the four complete sections shown.

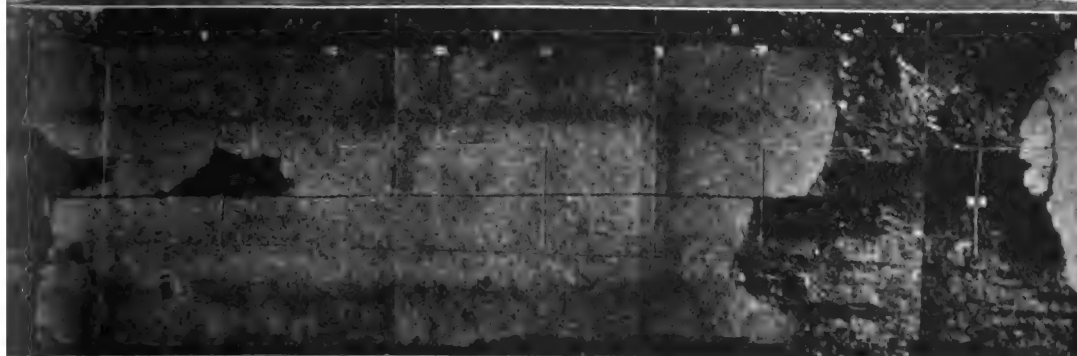


Section A

(California State Highway Commission Standard.) One of the types of road in which the State has invested millions.



Sections H and I
Designed by engineers of the State Highway Commission as possible "ultimate road types" for California.



THE GOLDEN GATE MOTOR DERBY

SCENES that illuminate Atlantic City's celebrated board walk on Easter Sunday when the rarest spectacle of charming feminine array is witnessed will have its counterpart on the Pacific Coast at the San Francisco speedway at San Carlos-on-the-Peninsula as a preliminary event to the big race that is to be staged there on April 16th.

Hundreds of handsomely gowned women, decked in garments that represent the final edict of Dame Fashion, will then promenade before the spectators on a specially constructed board walk that will parallel the top of the guard rail to the track proper for the entire length of the grandstand.

This colorful pageant will present a spectacle that has never before been offered automobile racing fans and will take the form of a contest of spirited rivalry among the members of the fair sex who will participate.

Such stars of the automobile racing world as Tommy Milton, 1921 champion of the world's speedways, Roscoe Sarles, Ralph Mulford and a dozen or more of their kinsmen of the roaring road will have to look to their laurels in sharing the spotlight of publicity in competition with the gaily decked young women.

A special board of judges will pass upon the merits of the habiliments of the parading women and the manner in which they present themselves. Several classifications and divisions of women's wear have been arranged by the judges. They will embrace Easter bonnets, gowns, wraps, furs, sports apparel, hosiery, footwear and bathing suits. The winners in the divisions will be awarded handsome trophies.

One of the most interesting events of this preliminary contest will be the automobile division, in which scores of the young women will ride in the latest models of many makes of cars.

Awards in the motor division will be determined by the manner in which



Left to right: Harry Hartz, Tommy Milton and Roscoe Sarles.

individual cars are handled, the garb of the drivers and passengers and the skill and appearance with which both cars and occupants are presented. Entries in the automobile section may be made by either dealers or individuals.

Tommy Milton's entry in the Golden Gate Motor Derby, by which the Easter Sunday speedway event is to be known, is regarded by those on the inside as practical assurance that a new world's record will be hung up. Milton is hailed as the driver who forced Jimmy Murphy, the San Francisco boy, to drive in record time last December on the San Francisco speedway. In that same race Milton's own performance netted him the 1921 championship, the most coveted prize of the year.

Since then Milton has injected additional pep and speed into his motor, proven by his brilliant performance on the Los Angeles speedway recently when he won the Washington's Birthday classic. Milton outdrove and outgamed the entire field of drivers and won the race by more than

two full laps. Racing fans therefore look to Milton to win, unless the other drivers show more headiness and generalship than they did in the southern race.

Resta May Race

Rivalry which existed for a time between Milton and Murphy, as a master-and-pupil feud, the latter having graced the mechanic's seat with Milton for a long time, has now been relegated to the past. Milton is now keeping an equally keen eye on Harry Hartz and Peter Depaolo. It was Hartz that really gave Tommy competition in the Los Angeles race.

Hope for the entry of Dario Resta in the Easter Sunday event has not been abandoned. The Italian's English cars have not yet reached New York City, but efforts are being made in the east to remove all reasonable obstacles that will hinder Resta's coming west. In addition a prominent local sportsman has agreed to sponsor the Italian by providing him with one of the world's fastest cars, all his expenses and winnings in the race. Therefore, the existing obstacles may be removed.

MEET MOTORDOM'S LATEST MASTERPIECE

Unquestionably the largest and most luxurious touring car seen in some years was recently completed for I. C. Eberly, president Oakbrook Hosiery Mills, Reading, Pennsylvania. Starting with a large and powerful six-cylinder chassis of well-known make the body builder lengthened the wheelbase to 156 inches, fitted a special body having sleek lines, dual windshields, disc wheels and interior equipment remarkable in its completeness.

One of the most novel features is

the rear instrument board which boasts, among other things, drinking water equipment. At the extreme left is a small glass door which is released by pressing a button, thus giving access to the drinking cups. Adjacent is a special yacht type faucet for drawing ice water or other liquid refreshment. The supply is drawn from underneath, where there is a tank holding three gallons surrounded by an ice chest holding three buckets of cracked ice. The air pump on the engine which

supplies pressure to the gasoline tank at the rear also supplies pressure to the drinking tank. A small hand pump on the front instrument board provides pressure when the engine is not running.

The next fixture on the rear instrument board is an altimeter which automatically indicates the elevation of the machine above sea level. In the center is a socket for a trouble lamp and directly beneath is a tonneau light. Just to the right of the center is



Two views of Packard's new touring palace.

a 100-mile speedometer, an electric clock with illuminated dial, which will run until it is worn out because it is connected to the storage battery. At the extreme right is a cigar lighter and beneath it is a distance type motometer which shows the temperature of the water in the radiator.

The small compartments below the rear instrument board are fitted with doors with frosted glass panels and inside are compartments containing thermos bottles, knives, forks, spoons, and dishes.

Under the tonneau floor is found a victrola and records, and there is also a compartment in the floor for a kodak.

The springs are equipped with air springs and shock absorbers. Yale locks are used on the hood, and a spare tire is mounted on each front fender. Special one piece windshields are used. The front shield has a small rain vision piece of amber colored glass. Both front and rear windshields have large wings to prevent side drafts.

The aluminum moulding used to

finish off the top of the body has a fused ivory finish and the same finish is used on door handles and other metal parts. At the rear is a large trunk rack. Four lights are used, a red tail light at either side, a stop light and a light for the license plate.

The auxiliary seats are in the form of small folding chairs of very comfortable design and are readily attached to the body sides. When not in use they are carried in the trunk at the rear.

NORTHERN CALIFORNIA ROUNDUP

SIXTY years ago, on the spot where workmen are now preparing the grandstand and track for the 1922 Northern California Roundup, a hardy band of ranchers and pioneer merchants gathered their arms and food for the first expedition against the Northern California Indians.

Frequent raids upon the villages of Chico and Tehama, which were in those days but a few scattering houses, and upon the homes of the frontiersmen who had braved the threat of the tribes and staked their claims at the furthestmost point north, brought about this campaign of vengeance.

From this rendezvous the little army proceeded up the Deer Creek Canyon. The Indians were surprised in an early morning attack and the tribe was exterminated, save for the women and children, who were spared by the invaders.

At least, this was the report of the fighters. Then the white settlers lived in peace for two years more, until a small band of Indians, the survivors of the raid, swooped down from the mountains and spared no one in their attacks upon the small white population. Women and children were massacred and the male population

driven before the warriors. Homes were burned and crops were destroyed. Such was the raid of 1864.

Although hunters reported in 1870 of having seen a fragment of the old tribe in the Deer Creek country, it was



not until 1911 that Ishi, the last of the Deer Creek tribe, surrendered to the white authorities. Officials from the University of California took him in charge, and for the years he lived in civilization he was the center of attraction for those who labor in the

research of Indian lore and custom. If Ishi could return to his old haunts; if he could follow the old trail down the Deer Creek Canyon to its mouth, during the last days of April, he would find this rendezvous of his enemies of old transformed into a huge show place. Before his bewildered native eyes thousands of people would appear. To his ears, tuned only to the voice of the birds and the stealthy step of his animal companions, would come the sound of snorting horses, the yells of cowboys and civilized Indians as they sport before the crowded grandstands and the cheers of the people who pack the tiers of seats before the dirt arena.

The 1922 Northern California Roundup, the greatest of its kind in the north, would be on.

Today workmen are preparing the track and stand for this event. Seating capacity is being extended to handle the biggest crowd in the history of the roundup. Parking and camping space is being provided as a medium to attract the motoring public of the State. Situated on the Bennett and Bell ranch, 20 miles north of Chico and 5 miles east of the State Highway, the big show will be held April 27th, 28th, 29th and 30th.

TOURING IN "NATURE'S CURIOSITY SHOP"

(Continued from page 15)

These various trails from the Red Bluff - Susanville lateral approaches and from the Redding approach to the Manzanita Portal of the Park, will converge for the final climb on the southerly and southeasterly base of the Peak.

The Solfataric Regions

Around the base of Lassen Peak, from the southwest to the southeast, a solfataric region of impressive interest and great variety exists.

Geysers, forcing boiling water with escaping steam high into the air; hot springs and boiling lakes; pools of bubbling, boiling mud, and multi-colored paint pots; solfataric vents, emitting vapors and gases laden with the mineral elements from their source or from the rocks through which they pass.

Innumerable mineral springs, among which are readily recognized the ordinary sulphur springs, hot and cold, and the sparkling, palatable soda springs, but unclassified thermal springs in complex variety are indicated by the mineral sediments and incrustations, offering a wide range for chemical investigation to determine probable therapeutic value.

Some of these springs in the Los

Molinos drainage have established a local reputation for curative powers, and it is possible that in this field the National Park Service may develop an asset of great potential public value.

The solfataric area of Los Molinos Creek is most easily accessible from Battle Creek Meadows or Morgan Springs on the Red Bluff-Susanville highway lateral. About one mile within the boundaries of the Park, and near the Mineral Forest Trail to the Peak, the old sulphur works marks an interesting region. Thermal sulphur springs and steamers are present here, and in the immediate vicinity one of the largest soda springs of the Park may be visited. At a point about half a mile north of the old sulphur works, and at a higher elevation, a geyser of considerable force is active, with evidences that its play at one period must have been very great. Boiling water is forced to a height of several feet above its vent, and the hissing of escaping steam that is carried to a height of 75 feet or more can be heard for a quarter of a mile.

A Miniature Inferno

Deep in Los Molinos Canyon, between two imposing mountain peaks,

Black Butte and Diamond Mountain, is Hot Spring Valley and the Steamboat Springs, which are well worth visiting. Of greater scenic interest, however, in the Los Molinos drainage, is the veritable inferno named by some wag "Bumpass' Hell," because a Mr. Bumpass at one time fell into one of Satan's receptacles that abound in this weird region. This particular inferno occupies an old crater, over a plug of basaltic lava marking a volcanic vent much younger than the glaciated rocks forming the cliffs and peaks which enclose it.

On the west the unusual coloring caused by igneous and solfataric agencies and exposed by the erosion of the steep canyon walls can be seen from a distance of several miles, but the visitor is otherwise ushered into the presence with suggestive suddenness. The realism is accentuated by the rising steam and vapors from small boiling lakelets, and numerous hot springs; by the hiss of steam and hollow sounds emitted from craters and caldrons of bubbling volcanic mud and by the strange blending of color and tints in the burnt-out crater, and of its mineral incrustations.

After making sure that the devil is

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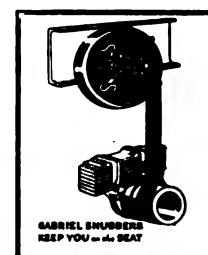
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not on the job, we descend into "the pit," and view the awe-inspiring spectacle more intimately, moving about with great care, lest what happened to Bumpass would happen to us. We will not try to describe it further. It must be seen to be appreciated.

Where Satan Cooks

The Devil's Kitchen is nearly 4 miles in an air line, a little southwest of the Inferno—a long way for service. For mortals to reach it the best route is from the Red Bluff-Susanville highway, via Chester or Warner Valley and Drakesbad. The steam rising from the culinary department of H. S. M.—His Satanic Majesty—may be observed for miles, and it is a busy place. The trail leads on easy grade up a crystal mountain stream, with open glades and meadows fringed with aspen and the lodge-pole pine, while the mountain sides are forested with yellow pine and fir.

Again the pilgrim is ushered into the supernatural unexpectedly. Ascending the right bank, around a high point we find ourselves at the east portal of the Devil's Kitchen—the stream that we have been following flows through this portal; on either side of the stream are boiling springs sputtering with pent-up intensity. A short distance to the left giant geysers are spouting

steam several hundred feet into the air. The stream flowing through this wonderland must be the River Styx—and on the map compiled by the writer it is the Little Styx. We look about for Charon and his ferry. We expect to see the Devil or his chef any moment to bid us welcome or to admonish us to "get to hell out of here;" we look for the inscription, "abandon hope, all ye who enter here," and failing to see it we take a chance and enter.

The roaring geysers to the left are unmistakably of recent origin. The geyser area has been extended eastward some distance to the very edge of the great lava bluffs that mark the limit of the solfataric area in this direction. This increased activity has taken place in the past year or two, or since the recent major eruptions on Lassen Peak, 7 miles distant in air line. These new activities suggest the possibility of physical connection between the Devil's Kitchen area and the renewed eruptions of the Peak—a connection which has not been noted by scientific observers so far as the writer is aware.

The column of water and steam from the main geyser in the new group is fully 3 feet in diameter at the vent, and the trees on a bluff 50 feet above the crater were coated with sediment,

though heavy rains had fallen, indicating recent periods of more active geyser play when the solid column must have been carried to a great height. The steam from these newly developed geysers was ejected to a height of 150 to 200 feet at the time of our visit.

The Devil's Kitchen is an oblong opening, nearly one-half mile in length by an eighth of a mile in width, enclosed on all sides by great canyon cliffs or steep mountain slopes, except for a narrow outlet through which flows the Little Styx. The stream has its source on the southeasterly flank of Lassen Peak and plunges into the wonder region over cliffs, creating a beautiful waterfall, flowing through on its spectacular journey, its banks lined with boiling springs and geysers.

In an area of from 25 to 30 acres in extent, it is a conservative estimate that there are in active play not fewer than 700 to 800 boiling springs and geysers, boiling mud caldrons and paint pots, and solfataric vents and craters. Within the Devil's Kitchen the escaping steam from hundreds of active vents interferes with observation—or we may add, with the cooking.

This bizarre region must be seen and heard to be appreciated; we left it with the impression that if this is the

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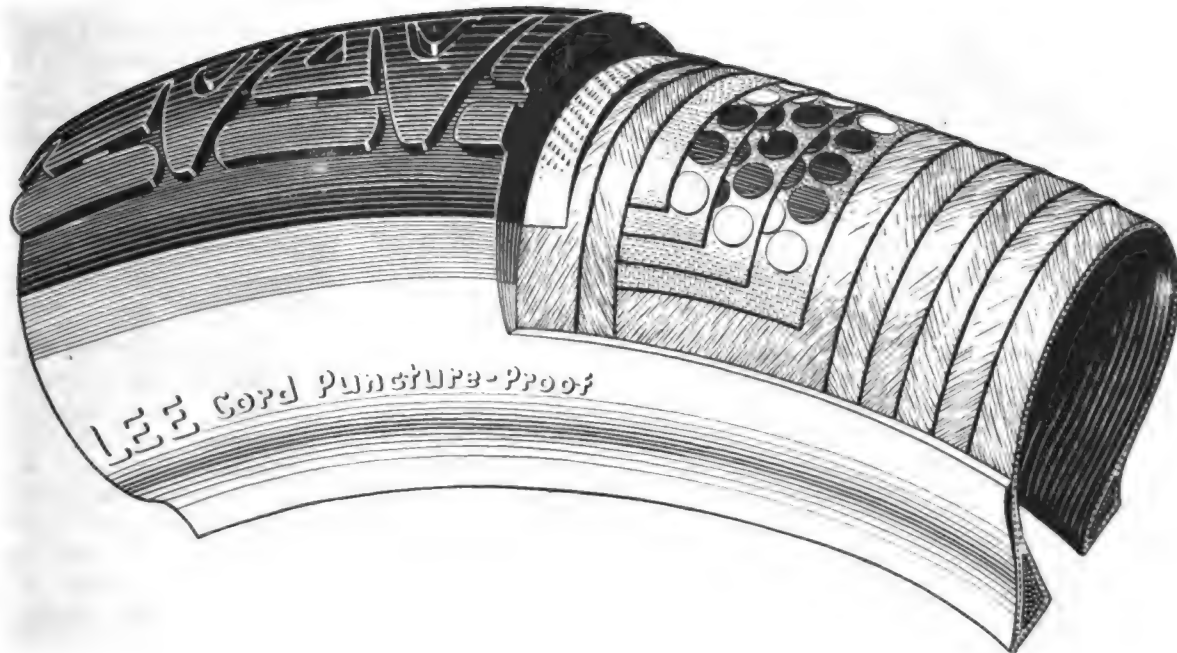
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Devil's Kitchen, it is a helluva place to cook.

Literally "A Boiling Lake"

The Devil's Kitchen, with its wonderful geyser area, is on a direct line between the inferno at Bumpass' Hell and Lake Tartarus or the "Boiling Lake." The lake is a unique feature of scenic California, and is readily accessible from the Chester Approach Road via Warner Valley, and the terminus of auto travel at Drakesbad, less than a mile away over an easy bridle trail. A tributary of the Little Styx, or Hot Spring Valley Creek, offers an outlet when the lake overflows, but at the time of our visit the surface was lower than the notch in its shore-line rim.

Fringed with forest trees on a gently sloping ridge of lava, the lake is hidden in an oval basin approximately 750 feet in its greatest dimension—a simmering caldron several acres in extent. From its surface steam is continuously rising, at times wafted over the tree tops, revealing the position of the lake from the distance. Around its shores mud pots and pools are bubbling and gurgling; their burden of volcanic residue turned over and over for centuries has attained an atom-like fineness. Small craters with mud cones built up about their steaming vents occur at intervals, and on its southerly rim sulphurous vapors from

many openings add to the realism of a view of Hades in miniature.

When the writer visited this region about the middle of November, Lake Tartarus was revealed in the opening glory of its winter setting. At this elevation, nearly 6,000 feet above sea level, November nights are frosty, and an early morning visit found the graceful conifers and other trees about its shores scintillating with the "silver thaw" caused by the congealing steam, a million radiant gems on every bough, each individual needle of pine and fir supporting a symmetrical jewel fashioned during the night in Nature's lapidary.

Two miles southeast of the boiling lake at the head of Willow Creek, and near the south boundary of the park, an interesting geyser marks the limit in this direction of the solfatara and associated phenomena.

The expressions of volcanism that abound, unique, and in some instances awe inspiring, impress the visitor strangely, and yet combined with the unusual in Nature, features of scenic charm are interwoven.

Freak Handiwork of Nature

Features of alluring interest that cannot be covered within the scope of this article will intrigue the imagination of visitors for many a vacation season in the Lassen region. Among

these are the lava caves, marking the subterranean flow of one time molten lava streams, now indicated by great natural tubes, with arched roofs and encrusted walls.

In places lava caverns are filled, or partly filled, with ice; great crystal columns extending from roof to floor, or cataracts of ice mark the cavern walls. These are in strange contrast with the summer heat which beats above the lava chambers where ice is conserved for the comfort and convenience of the summer visitor. These expressions of Nature seem freakish until the scientific reason for their occurrence is made clear, when they seem a natural adjunct of the wonder region in which they occur.

The great variety of scientific and scenic marvels within the confines of Lassen Volcanic National Park justifies the appellation of "Nature's Curiosity Shop."

The Encircling Highways

The readers of MOTOR LAND and the traveling public—sightseers, tourists and summer vacationists—are more particularly interested in how Uncle Samuel's new playground may be reached, and what accommodations for the traveling public are available, and when the region of the Lassen Volcanic National Park is accessible

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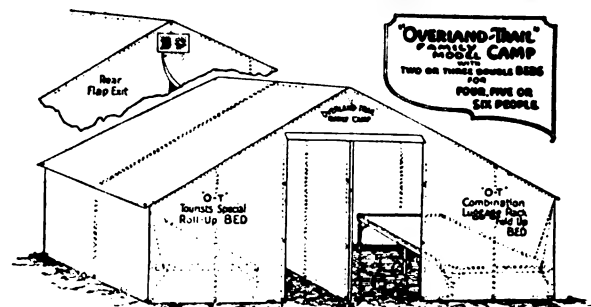
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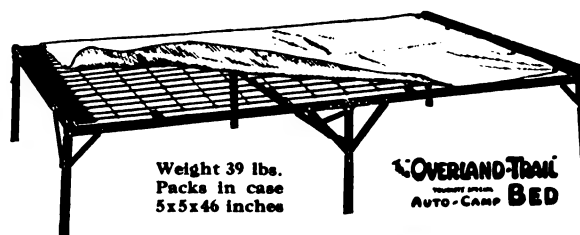
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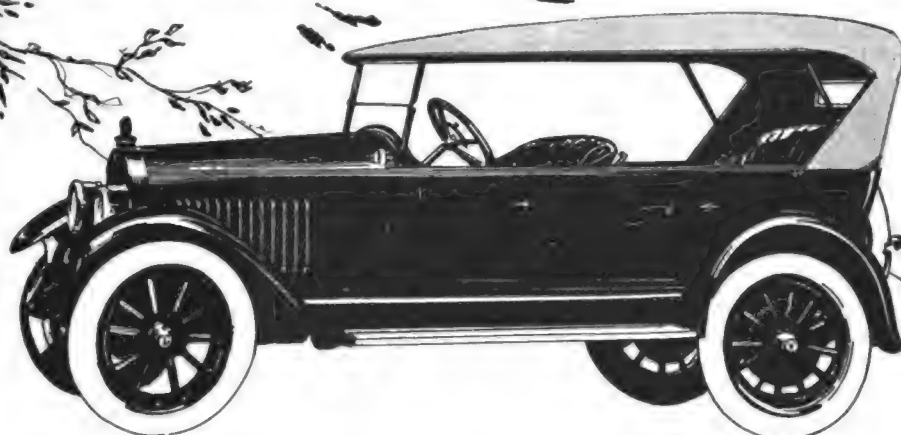
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with the melting of the winter's snows at these high elevations.

The main lines of travel are open long before the usual summer vacation season, and by the first of June all approaches to the Lassen region can be negotiated without difficulty. The climb to the summit of Lassen Peak has been made by hardy Alpine enthusiasts in midwinter, but with the opening of the vacation season this Ultima Thule of the mountain climber is always accessible with its inspiring view and close up scientific interest.

The Lassen region has the unusual advantage of many approach highways, and with the completion of construction already under way a scenic cross road in upper California will attract the motorists from far and near.

From Chico, Redding and Red Bluff, on the magnificent paved Pacific Highway, and with excellent railroad service, the approach highways diverge, leading to the Park from the Sacramento Valley to various vantage points of entrance. From Oroville the Feather River Highway will offer picturesque access by the way of Plumas County when that State project has materialized.

From Red Bluff for over 100 miles easterly circling the Park from 6 to 10 miles distant from its southerly boundary, the State Highway lateral to Su-

sanville, linking with it the important city of Westwood, is now being rapidly constructed. This approach is convenient for visitors from the East by the way of Susanville, or over the Southern Pacific branch, leaving the main line at Fernley in the State of Nevada, and its terminal at Westwood.

From Paxton on the Western Pacific by way of Greenville and Forest Camp, an approach road skirts Lake Almanor from the Feather River country, intersecting the State Highway lateral at Chester. From Chico the old Humboldt Road of pioneer days connects with the State Highway lateral on the westerly shores of Lake Almanor, a few miles before Chester is reached, and here may deflect toward the west to Morgan Springs on Los Molinos Creek and the Battle Creek Meadows near Mineral, or continue the approach direct via Chester and Warner Valley to Drakesbad.

The approach directly from the west over the Shingletown Forest Plateau has been described but not the outer circle of forest roads connecting with the State Highway lateral at Westwood. This road leads to the north and northwest around the east and northerly side of the Park to the Hat Creek country in Shasta County, where it intersects the approach from Pit River and the Redding-Alturas State Highway lateral. From this in-

tersection it extends southwest to Viola, where it connects with the Redding approach to the western portal of the Park, near Manzanita Lake—a splendid "outer circle" accessible to the summer travel, from which by-ways and trails lead to many points of interest.

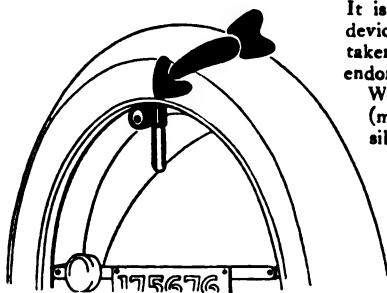
This outer circle of forest road will be complete when the proposed section between Viola in Shasta County and Mineral in Tehama County is constructed. Under recent Federal appropriation, the Forest Service has set aside funds to initiate work on this section of the road, and the entire system encircling the Park will be improved in co-operation with the counties through which they pass.

Tourist Hotels in Park a Need

The question arises, "What shall we do to be served?" The cities of Oroville, Chico, Red Bluff and Redding on the west with paved Pacific Highway and railroad connections and direct approaches to the Park, and Susanville and Westwood on the east, similarly situated, offer excellent hotel facilities and comparatively short auto runs to the Park itself.

Around the Park the accommodations so far developed are rustic in character, and many visitors confine themselves to camping facilities. In the Battle Creek Meadows and Los

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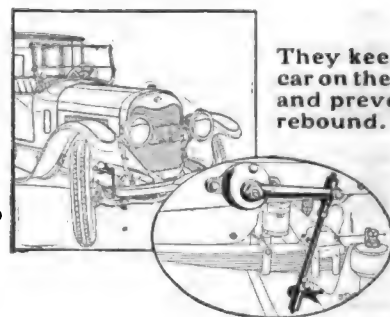
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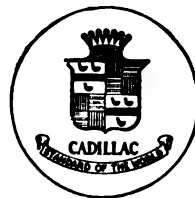
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TEL. PROSPECT 100

Molinos approach such accommodations have long been available in the summer season, and will be widely extended and improved during the present year.

In connection with the approach development from the city of Redding and the Pacific Highway to the Manzanita Portal of the Park, a rustic camp, with excellent accommodations and sanitary conditions, will be developed during the present season at

Manzanita Lake and Lake Reflection at the base of Chaos Crags and Lassen Peak.

At Chester, near Lake Almanor, and at Forest Camp near Greenville in the upper Feather River country, visitors may find accommodations within easy access of the Park, and the same is true of Warner Valley at Lee's and Kelley's near the boundary of the Park, and at Drakesbad within the Park confines.

The communities around the Park region appreciate the fact that it is up to them to provide such rustic accommodations as will meet the immediate needs, and an organized effort is under way for the ultimate development on a splendid scale.

With this information as to routes of travel and present accommodation facilities, the world and his wife is invited to seek out and enjoy the wonder works of Nature in the Lassen Region.

MILADY MOTORIST

(Continued from page 17)

developments, although some prefer the separate skirt, worn with a matching or contrasting vest. For the chilly ride, there are long, all enveloping wraps, offering perfect protection from dusty roads and cool breezes alike.

Despite the many advantages of the cape, the polo coat is holding its own, especially among those women who drive their own cars a great deal. To this class the cape is somewhat hampering in manipulating gears and pedals, and the closer fitting lines of the coat are more suitable. And there's no denying the popularity of the rough-and-ready sport suit, with its slim, straight lines and youthful appeal.

Knickers—bless them—are simply taking the fashionable public by storm.

They are seen on the links, tennis courts, the beach, and are exceedingly popular for motoring. One woman has said "if you once wear knickers in a car, you'll never want to go back to skirts." And after all, they are the sensible thing. One clever little suit seen this season consists of knickers, and a skirt which buttons down the front. Milady steps into her car, unbuttons the skirt, slips it over her shoulders, and presto! she has the smartest little cape and knicker costume imaginable.

There's a big variety of materials to select from, among which the more popular seem to be the tweeds, home-spuns, and new knitted fabrics. Plaids and stripes, both in dashing color

combinations and the softer pastel shades, make up into stunning clothes. The new silk knit fabrics are often developed in odd patterns, some featuring the Navajo designs.

An interesting novelty is the use of fringe. It is seen on all sorts of costumes—the bottoms of capes, the skirts, collars, cuffs and scarfs—everything is fringed! It is a very simple and effective way to finish a wrap or suit.

Many capes and suits feature the throw scarf collar, which may be worn thrown open, or wrapped snugly around the neck. Separate scarfs in both silk and wool are increasing in popularity. Often the finishing touch to a suit is added by one of these scarfs in a suitable color.

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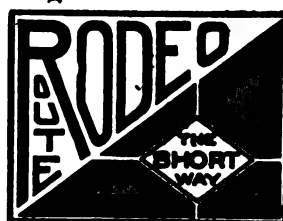
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9:00 a.m.	4:30 p.m.	8:30 a.m.	4:00 p.m.
9:30 a.m.	5:00 p.m.	9:00 a.m.	4:30 p.m.
10:00 a.m.	5:30 p.m.	9:30 a.m.	5:00 p.m.
10:30 a.m.	6:00 p.m.	10:00 a.m.	5:30 p.m.
11:00 a.m.	6:30 p.m.	10:30 a.m.	6:00 p.m.
11:30 a.m.	7:00 p.m.	11:00 a.m.	6:30 p.m.
12:00 p.m.	7:30 p.m.	11:30 a.m.	7:00 p.m.
12:30 p.m.	8:00 p.m.	12:00 p.m.	7:30 p.m.
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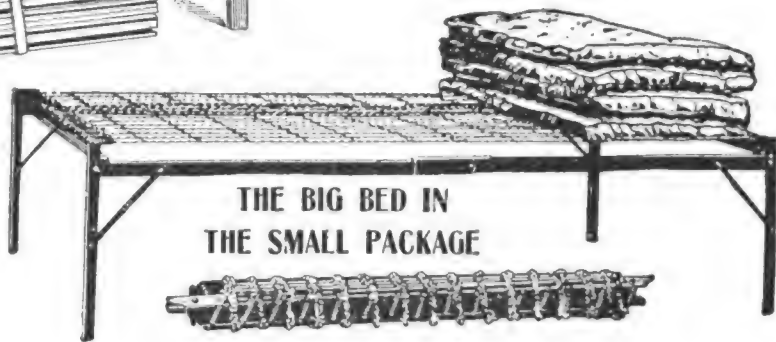


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ROMANCE OF A VOITURETTE

(Continued from page 21)

the road ran, apparently, on a bracket. It literally hung between earth and sky, with God somewhere overhead and the rest of creation an immeasurable distance beneath us.

Here the vista was so exquisitely beautiful that I scarcely noticed that we had stopped to admire it.

We had stopped, however, and the usually garrulous Alphonse had got out without saying a word. He sniffed about the machine as was his custom, peeped into a chink here, felt a bolt there, and so forth. I guessed it was the same thing over again, so I waited.

Presently he whistled softly.

"Wherefore this sweet music?" I inquired.

Alphonse shrugged his shoulders as only a Frenchman can, and fluttered his grimy fingers.

"She Has Departed"

"It has come, my friend!" he replied calmly. "She has departed!"

He turned philosophically to the tail of the car and began unloading the sack of ice as a preliminary to further reflections.

I never tried to understand exactly what was the matter with the voiturette, because other thoughts entirely occupied my mind. We were, as we

could see by the last mile post—every quarter of a mile along the road a white post with the distance from Kuala Lumpur marked the way—about eleven miles from Kuala Kubu and about the same distance from the Gap.

It was unthinkable to go forward and upward. Our only chance of rescue was to await the arrival of some Malay or Kling with a bullock cart, and commandeer his team for a tow.

An hour passed. The ice and the bottles served their purposes benignly; but no bullock cart appeared; no human creature.

Then, welcome as manna in the wilderness, a couple of lanky Sikhs came trudging around the curve above the one whereon we were stalled, overlooking Asia.

It was for me to hail them. When I did so in the language of the Punjab, wherein aforesaid I had long tarried, the two giants halted as if by magic, came to attention and saluted. They were ex-soldiers. Here were two Sahibs in distress.

"Alas, Sahib! the waiting will avail nothing. No carts will come this way mayhap in many moons.

"Such is the *hookum*, the order. There is a pestilence among the cattle. There-

fore none may pass the road lest they thus carry the disorder. Here the fire-wagon must remain until the pestilence be past."

Alphonse heard the doom of his voiturette with a shrug. Then, with promises of high reward, we enlisted the services of the Sikhs.

A bottle of Scotch divided between them, and quaffed neat, sealed the bargain. Gathering up as much of the ice as could be packed, and condensing the contents of the two picnic hampers into one, we started to march back to Kuala Kubu.

Do not ask what was discussed on that wearying hike through jungle and mountain. When we got back to Kuala Kubu and into the rest house there, we were two tired adventurers, with no clothes to change into, and nowhere to go.

In the tropics, one changes raiment twice or three times a day. Our plight was, therefore, deplorable from an aesthetic point of view.

A Chinese *Kedeh* or general shop helped us to alleviate some of our misery by supplying us with garments that were welcome but essentially Chinese.

Then there was the telephone line that connected the Raub mines with

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A wonderful record—yet, it was to be expected—the internal construction of the Gill Battery provides for nothing else than perfect performance.

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Consider the wonderful record of the Gill when the time comes to install a new battery in your car. It is the battery you can buy with confidence. It has a two year guarantee. It costs practically the same as any other standard battery. Let us send you our illustrated folder.

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*The only battery that has suc-
cessfully eliminated separators.*

Kuala Lumpur and which had a station at Kuala Kubu, and through that we were able to secure communication with the outer world.

Mocking jeers and ribald laughter greeted my appeals for rescue. I was joyously assured that no automobile was in active commission at Kuala Lumpur; that no bullock, horse or pony could take the road, and that Kuala Kubu was a healthy place in which to spend a month or so of recuperative rest. Coolies might bring out our clothes and mail to us; but if we desired to leave the back country we would have to hire wheelbarrows or walk.

Then the great idea was conceived of asking the assistance of the Towkay Loke Yew. Apart from being a sportsman to the core, the Towkay was notoriously the most resourceful personality in the State of Selangor, and was always willing to display that resourcefulness on behalf of a friend.

Solved in a Jiffy

The Towkay brought his quick oriental mind to bear upon the problem, and solved it in a jiffy. It was true that the Government had forbidden horses and cattle to walk upon the roads lest thereby they might spread the infection with their hoofs; but there was no order forbidding the

carriage of horse or bullock in a vehicle.

His plan, therefore, was to get his big new English-built Albion car—a titanic machine of nearly 9 horsepower—patched and tinkered so as to make the Kuala Kubu run, and to dispatch per said car one Battak pony.

Battak ponies look like watch charms. They come from Sumatra, stand about 40 inches high and weigh a couple of hundred pounds or thereabouts. But they are strong as wire and are used as gharry horses in Singapore, Penang and elsewhere.

The Battak pony that Loke Yew would send in his Albion car would haul back the voiturette to Kuala Lumpur, and thereafter be slaughtered as a sacrifice to the prejudices of an enlightened British Government.

Thus it happened that Alphonse and I sat, hopefully, on the verandah of the Kuala Kubu Rest House next day, and counted the hours that would bring the Towkay's rescuers. The hours duly passed but no Albion came in view. Finally we sent a messenger down the road in quest of tidings.

In a few minutes he reappeared shouting gaily.

"The carriage is coming! The carriage is coming!"

Joyfully we sallied forth to welcome its arrival.

It was coming along, slowly, noiselessly, decorously.

There were none of those boisterous explosions or rattling clamors that advertised the progress of the voiturette.

A Battak pony about three and a half feet high, straining in improvised rope traces, was the only motive power then acting upon the Towkay's rescuing chariot.

The Albion had held out to within a couple of miles of Kuala Kubu. The pony had done the rest.

Alas! It was never my proud privilege to ride in that particular Albion; and never again before Resurrection Day—assuming that good automobiles are then resurrected with their deserving owners—may I hope to see the voiturette of Alphonse.

In the matter of our misery, "Pelion was on Ossa piled" that day in the Ulu Selangor.

When the rescue expedition returned from the scene of our breakdown on the precipice, it brought back no De Dion-Bouton. In lieu thereof the searchers brought reports of a combat titanic and unprecedented in the lurid history of the jungle.

Nobody had witnessed the battle; but the Malays of the Ulu, skilled in all jungle lore, and in the reading of signs to them more simple than the

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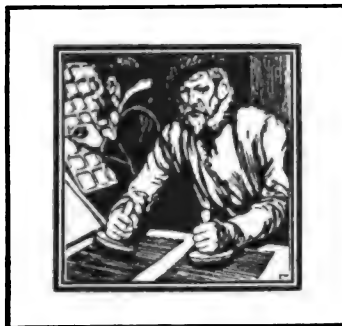
I WANT printed publicity that will properly reflect the high quality of my merchandise—not a mere printing job. I want my printing to pay for itself in real orders.”

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San Francisco

written word, vividly reconstructed the tragedy.

The tracks were there on the soft road recording every chapter of the heroic struggle, and the catastrophic finale thereof wherein both combatants — bison and voiturette — went hurtling simultaneously into eternity.

Some wandering seladang — the great wild bison of Malaya — had passed that way and his fiery eye had been arrested by the affronting scarlet of the voiturette.

Swiftest, fiercest and most powerful of all the jungle beasts — the peaceful elephant alone excepted — the

seladang had charged the red intruder upon his solitudes.

How the light vehicle had passively resisted the onslaught, and been crushed against the cliff wall on the hill side of the road, was graphically described by the readers of the signs in the trail. Also how the seladang, exacerbated into frenzy when his horns got trapped in the stout "artillery" wheels, pawed and stamped and ramped and roared in impotent fury.

Splendid in the pride of his power, demented by exasperation as the hideous machine clung to and clanked about his horns and blinded him, the giant ox had heaved up the abomin-

able mass of wreckage and swung it viciously with a wrench that would shake free the clutches of Fate.

As he swung, he slipped.

Snorting, bellowing, shrieking, ox and car, inextricable in their chaos of despair, toppled through the blue space and crashed down upon the tops of the green impaling trees in the valley.

When the would be salvors arrived upon the scene they saw only the tormenting spoor-marks that told the story of the battle. Far, far below them, eager vultures hovered above the dead, some gluttoned with the beef, others still hungrily soaring.

BUILDING A PRIVATE GARAGE

(Continued from page 18)

it 15 by 20 for a car of average size and 15 by 24 feet for a large car garage. A building 15 feet wide is large enough to accommodate a second car when this is necessary, although a large door opening will be essential to get both cars in unless the building is considerably longer than the cars.

Two car garages need not be double the dimensions of a single car garage. Proceeding on the idea that a 3-foot strip all around both cars is required the width will be 3 plus 6 plus 3 plus 6 plus 3 feet, or 21 feet, while the

length or depth should be 20 to 24 feet, depending on the size of cars to be stored.

Plenty of daylight is essential if work is to be done on the car, and therefore it is advisable to have windows on all four sides, including windows in the doors. Windows on all sides will also make the building cooler during the warm months.

If it is considered desirable to keep the garage as cool as possible in summer the building should have a ceiling in order to form an air space between the

ceiling and the roof. This air space will act as a heat insulator and will prevent the major portion of the sun's hot rays from reaching the interior. Double walls with an air space between will also aid in keeping the building cool in summer and warm in winter. Brick or concrete do not transmit heat as readily as a wood structure, and terra cotta tile is still better because the air spaces in it act to insulate.

The work bench and closets should be designed to occupy a strip along one side, and in the plan shown these

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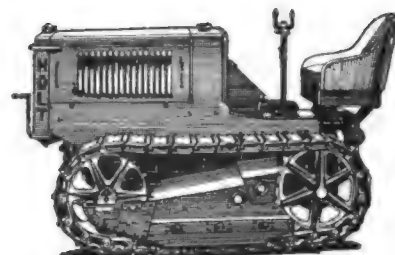
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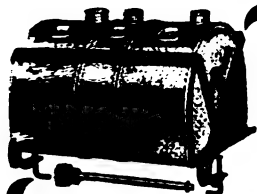
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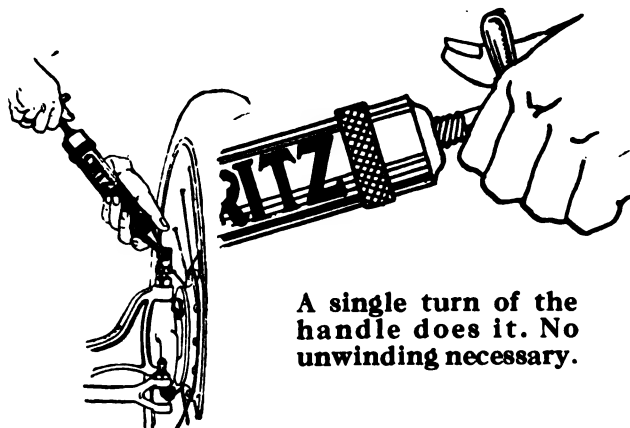
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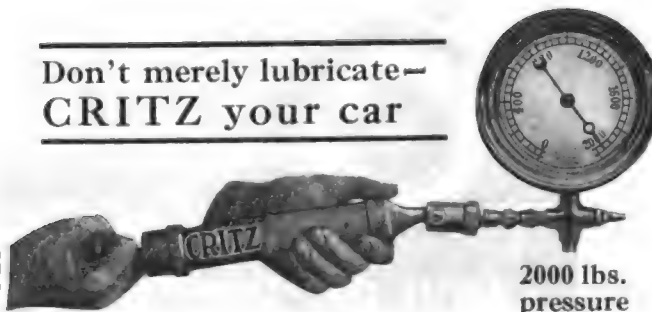
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Don't merely lubricate—
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2000 lbs.
pressure

adjuncts are placed on the long side of the building. Note that the work bench is in front of the window.

Usually it is best to slope the garage floor toward a central point so that all water runs from the sides to the center.

If a pit is desired its dimensions should be approximately 3 feet wide, 10 feet long and 4 feet deep. Some motorists place a small bench equipped with a vise across one end so that when adjusting bearings or doing other jobs under the car the presence of the bench and the vise makes it unnecessary to waste much time climbing in and out of the pit. The floor of the pit should be very carefully drained. When not in use the pit may be covered by cutting a number of heavy planks to fit crosswise into the opening. For adequate greasing and inspection of the under side of the car, it is perhaps a better plan to leave the pit open and available at all times.

Instead of a pit special horses may be made for supporting the wheels about 3 feet in the air, the car being raised by a block and chain. Then a horse is put under each wheel.

A still better plan is to have the whole floor of the garage placed about 3 feet below the level of the entrance driveway, in which case the car is run into the garage on U-shaped elevated tracks which may be made from structural channel iron or from planks

laid on edge. This method is used here and there and certainly makes the under side of the car extremely accessible for greasing, adjustment or inspection.

The location of the garage and its appearance are considerations of even more importance than its design from a utilitarian standpoint. In almost every case it is desirable to have the architecture of the garage match that of the house. It is rarely wise to deviate from this rule. Furthermore, the garage should be in keeping with the house. If the house is plain, the garage may be plain also. But if the house is elaborate, the garage should be likewise. Nothing destroys the appearance of a fine house more successfully than the presence of a garage that is not equally presentable.

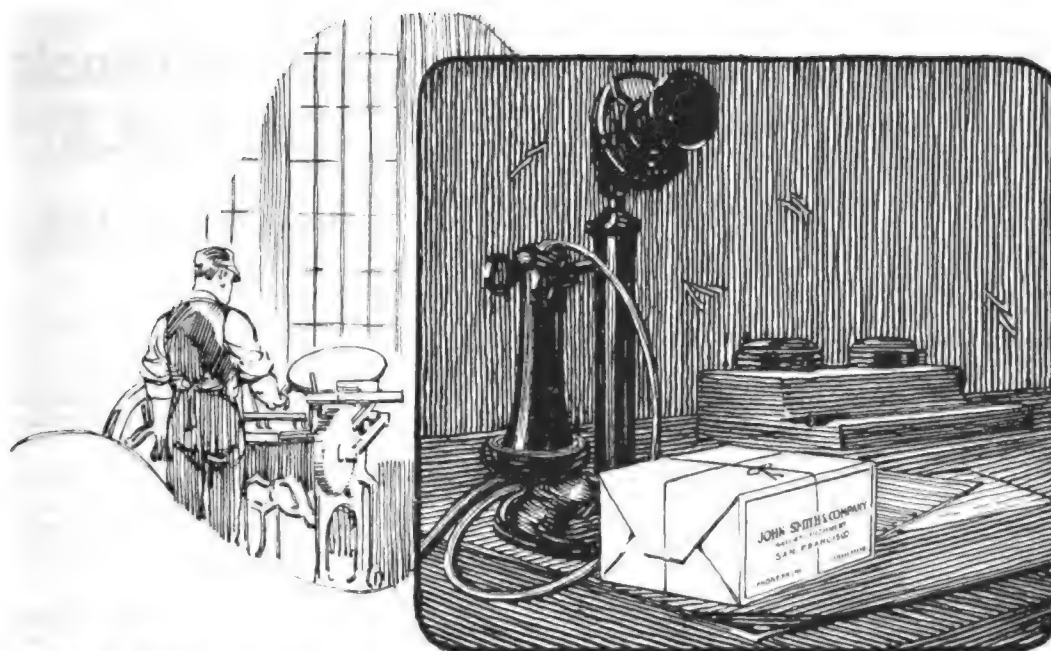
But it is not enough to have a garage which matches the house architecturally; the garage must also be located properly. It must fit into the picture. Making it fit is a matter of judgment. No rules can be given, although usually the mistake of locating it too close to the house is made. Where property limits or other considerations make it necessary to place the garage close to the house, it is frequently a better plan to tie the building to the house architecturally, by means of a fence, a wall or a pergola. This work, of course, demands the services of an architect, and it is hardly necessary to

add that it will invariably pay to have an architect design the building, locate it on the property and see that all necessary steps are taken to make the building fit properly into the picture. There are plenty of architects who will do this work for an extremely moderate sum; and in fact it may be stated there is an architect for every man's purse.

The modern tendency is to make the garage and the house a single unit, to locate the garage in the house, and this practice has much to recommend it. The convenience of having the car right in the house cannot be overestimated. This is true, particularly in stormy weather, when a walk to a garage even 50 feet away might be considered somewhat of a hardship.

It costs less to build the garage into the house than it does to erect a separate building. In fact, if access to the basement may be had, the garage will cost practically nothing. Nearly every house has much more basement room than is required. Part of it can easily be spared to house the car. Therefore the only remaining consideration is whether it is feasible to drive into the basement. If the house is located on a sloping piece of ground it will cost very little to construct a driveway to the basement. And even if the building is located on a level spot the basement may be reached by excavating a sloping driveway.

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Adin.....Adin Garage	Chico.....Hotel Oaks	Fresno.....Valley Grill (restaurant)	Lake Tahoe.....Fallen Leaf Lodge
Aetna Springs.....Napa Co.	Chico.....Chico Garage	Fresno.....A. C. B. Garage	Lake Tahoe.....Homewood Hotel
Alturas.....Holy City Garage	Chico.....Richardson Springs	Fresno.....Central Garage	Lake View, Ore.....Consolidated Stage Co.
Alturas.....Hotel Niles	Chowchilla.....Chowchilla Hotel	Fresno.....Don Lee Garage	Lakeport.....Fraser's Garage
Alturas.....Modoc Auto Co.	Ciaco.....Ciaco Hotel	Fresno.....Schultz Garage	Larkspur.....Blue Rock Hotel
Alvarado.....Reliance Garage	Clements.....Service Garage	Fresno.....Smith Webb Auto Supply Co.	Laton.....Laton Garage
Angela Camp.....Angela Hotel	Cloverdale.....Cloverdale Garage	Galt.....Midway Garage	Lemoore.....Buckner Garage
Angela Camp.....City Garage	Cloverdale.....Dad Snyder's Tavern	Garberville.....Parker Hotel	Livermore.....Valley Garage
Antioch.....Brun's Garage	Cloverdale.....McCray's	Garberville.....Garberville Garage	Livingston.....Abbotts Garage
Applegate.....Walmond Resort	Clovis.....C. W. M. Smith & Son Garage	Geyersville.....Pioneer Garage	Lockeford.....Lockeford Garage
Arbuckle.....Arbuckle Hotel	Coalinga.....Pleasant Valley Hotel	Gilroy.....Gilroy Hot Springs	Lodi.....Tokay City Garage
Arbuckle.....Almond Garage	Coalinga.....Coalinga Service Station	Gilroy.....Barney Motor Co.	Loleta.....Loleta Garage
Arcata.....Arcata Hotel	Coarse Gold.....Coarse Gold Hotel	Gonzales.....Alpine Tavern	Lookout.....Lookout Garage
Arcata.....Plaza Garage	Colfax.....Colfax Garage	Gonzales.....Johnson's Garage	Loomis.....Loomis Garage
Arena.....Arena Garage	Colusa.....Universal Garage	Grants Pass, Ore.....Oldings Garage	Los Banos.....Pacheco Garage
Atwater.....Atwater Garage	Cordella.....Cordella Garage	Grass Valley.....Grass Valley Garage	Los Gatos.....Hotel Lynden
Auburn.....Freeman Hotel	Corning.....Maywood Hotel	Greenville.....Forest Camp	Los Gatos.....Gateway Garage
Bartlett Springs.....Bartlett Springs Hotel	Cotati.....Speedway Garage	Greenville.....Lake Almanor Inn	Los Molinos.....Los Molinos Garage
Base Lake.....The Pines	Courtland.....Courtland Garage	Grenada.....Grenada Hotel	Loyalton.....Sierra Hotel
Bay Point.....Bay Point Garage	Crater Lake, Ore.....Crater Lake Hotel	Grizzly Bluff.....Weymouth Inn	Loyalton.....Sierra Auto Supply Co.
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Benicia.....Hotel Anderson	Crockett.....Hotel Crockett	Hamilton City.....Hamilton City Garage	Manteca.....Manteca Garage
Benicia.....Benicia Garage	Crows Landing.....Filippini Garage	Hammondton.....Goldfield Garage	Manteca.....Perry's Travelers Garage
Bieber.....Big Valley Garage	Daly City.....County Line Garage	Hanford.....King's Hotel	Mariposa.....Hotel Schlager
Blairsden.....Hotel Blairsden	Danville.....Olson & Bell Garage	Hanford.....Bush Garage	Mariposa.....Fort Sumpter Garage
Blairsden.....Feather River Inn	Davis.....University House	Hanford.....Cousins Tractor Co., Inc.	Martinez.....Hotel Oehm
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Boyes Springs.....Boyes Springs Resort	Delta.....Vollmer's Ranch Hotel	Haywards.....Hayward Garage	Martinez.....Martinez Garage & Machine Shop
Boyes Springs.....Boyes Springs Garage	Del Monte.....Hotel Del Monte	Haywards.....Hayward Garage	Marysville.....Western Hotel
Berkeley.....Berkeley Hotel, Hd. of Russell St.	Del Monte.....Del Monte Garage	Healdsburg.....Hotel Plaza	Marysville.....California Garage
Hotel Whitecotton.....Shattuck and Allston	Del Rey.....Del Rey Garage	Healdsburg.....Central Garage	Marysville.....Dunning Bros. Garage
Berthelsen's Garage.....2015 San Pablo Avenue	Dixon.....Rosal Bros. Garage	Hollister.....Hotel Hollister	Maxwell.....Maxwell Garage
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Shattuck Garage.....2061 Allston	Downville.....Downville Garage	Hopland.....Lambert's Garage	McCloud.....McCloud's Garage
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Big Trees, Calaveras County.....Calaveras Big Tree Grove Hotel	Dunsmuir.....Hotel Weed	Huntington Lake.....Huntington Lake Lodge	Merced.....El Capitan Hotel
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Callistoga.....Callistoga Garage	Fairmead.....Fairmead Garage	King City.....El Camino Garage	Minden, Nev.....Minden Inn
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Carrville.....Carrville Hotel	Fort Bragg.....Fort Bragg Garage	Lake Tahoe.....Bonanza Lodge	Monahaw.....Walkup & Moore Garage
	Fortuna.....Fortuna Garage	Lake Tahoe.....Tahoe Inn	Monahaw.....Tioga Lodge
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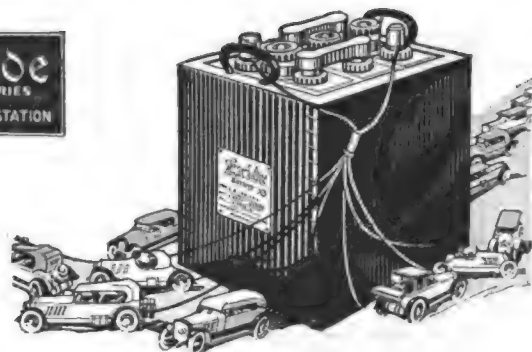
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Monte Rio. Monte Rio Hotel
Morgan Hill. Reliance Garage

Napa. Conner Hotel
Napa. Mission Garage
Napa. Napa Motor Supply Co.
Napa (near). Napa Soda Springs
Newcastle. Blair's Garage
Newman. K-L Garage
Niles. Niles Garage

OAKLAND

Hotel Athens. 1556 Broadway
Hotel Oakland
13th & 14th and Harrison & Alice
Hotel Sutter. 14th & Jefferson Sts.
Hotel Touraine. 16th and Clay Sts.
Hotel Woodrow. 644 14th St.
Antler's Garage. 1571 Harrison St.
Art O'Donnell Garage. 2576 Grove St.
Auto Palace Garage. 1551 Alice St.
Auditorium Garage. 127 E. 12th St.
Braah Bros. & Bowers, Inc.

2264 East 12th St.
Don Lee Garage. 2355 Broadway
Elite Garage & Machine Shop
3963 Piedmont Ave.
Foothill Garage. Blvd. near 55th Ave.
Fruitvale Garage. 3247 East 14th St.
Hobart Garage. 480 Hobart St.
Hudson & Essex Service Garage
2269 Broadway
Key Route Garage. 2215 Grove St.
Oakland Garage. 1412 Harrison St.
Stadium Garage

12th, Webster and 11th Sts.
Strand Garage. 3614 Telegraph Ave.
Tenth Street Garage. 110 Tenth St.
Tourist Garage. 5931 College Ave.

Electric Service Stations:

Motor Electric Co. 3320 Broadway
Smith United Service, Inc.
24th and Webster Sts.

Oakdale. Walthers Garage
Orland. Nock Auto Company
Oroville. Union Hotel
Oroville. Feather River Garage
Orr. Orr's Hot Springs

Pacific Grove. Pacific Grove Garage
and Machine Shop

Palo Alto. Depot Garage
Palo Alto. Palo Alto Hotel
Farlier. Farlier Garage
Patterson. Hotel Del Puerto
Patterson. Patterson Garage
Petaluma. Hill Plaza Garage
Petaluma. Petaluma Garage
Pine Ridge. Alder Springs
Pittsburg. Los Medanos Hotel
Pittsburg. W. & W. Garage
Placerville. Placerville Hotel
Placerville. The Forum Restaurant
Placerville. Placerville Garage
Planada. Hotel Planada
Pleasanton. Enterprise Garage
Portland, Ore. Imperial Hotel
Portland, Ore. Multnomah Hotel
Prospect, Ore. Prospect Hotel

Quincy. Sierra Auto Supply Co.

Red Bluff. Tremont Hotel
Red Bluff. Benjamin Bros. Garage
Redding. Golden Eagle Hotel

Redding. Lorenz Hotel
Redding. Hersey's Garage
Redding. Park Hotel
Redding. Redley Garage
Reno, Nev. Golden Hotel
Richmond. Richmond & San Rafael
Ferry & Transportation Co.
Richmond. West Side Garage
Rio Vista. Sidwell Garage
Riverdale. Byron's Garage
Rodeo. Rodeo Garage
Rodeo. Rodeo Vallejo Ferry
Roseville. Saugatad Bros. Garage
Roseburg, Oregon. Umpqua Hotel

Sacramento. Hotel Land
Sacramento. Hotel Sacramento
Sacramento. Travelers Hotel
Sacramento. Tourist Garage
Sacramento. Don Lee Garage
Sacramento. Arnold Bros. Garage
Sacramento. Subway Garage

Electric Service Stations:

Earl P. Cooper Battery & Elec. Co.
1014 12th St.
Carl Lamus
Electric Service Station, 711 M St.

Salinas. Hotel Jeffery
Salinas. Heple Garage
Salinas. Highway Garage
Salinas. Salinas Garage
San Andreas. Superior Garage
San Anselmo. San Anselmo Garage

SAN FRANCISCO

Bellevue Hotel. Geary & Taylor Sts.
Cartwright Hotel. 524 Sutter
Chancellor Hotel. 433 Powell
Clift Hotel. Geary and Taylor Sts.
Fairmont Hotel

California and Mason Sts.

Hotel Manx. Powell St. near O'Farrell St.

Palace Hotel. Market and New Montgomery Sts.

Richelleu Hotel. Geary and Van Ness Ave.

Hotel St. Francis. Geary and Powell Sts.

Hotel Sommerton. 440 Geary St.

Stewart Hotel. Geary near Powell St.

Hotel Sutter. Sutter and Kearny Sts.

Hotel Terminal. 60 Market St.

Hotel Washington. Grant Ave at Bush

Hotel Whitcomb. Market St. bet. 8th and 9th

A-1 Garage. 855 Geary St.

Barr Garage. 1023 Mission

Buttrich Garage. 840 Sutter St.

California Transportation Co. Pier 3

Century Garage. 675 Post St.

Don Lee Garage. O'Farrell and Van Ness Ave.

Enterprise Garage. 1350 California

Fairmont Garage. 1255 California

Golden Gate Ave. Garage. 64 Golden Gate Ave.

Granada Garage. 256 Turk St.

Grand Garage. 1440 Broadway

Graystone Garage. 1335 Larkin St.

Hoyle's Garage. 1945 Hyde

W. H. Hughson Garage. 11th and Market Sts.

P. J. Kelly's Garage. 735 Van Ness Ave.
Lotus Garage. 727 Valencia St.
Mission Garage. 1507 Valencia St.
Monarch Garage. 1361 Bush St.
Monticello S. S. Co. 636 Shrader St.
Park Garage. North End of Ferry Building
Pearson Garage. 345 Bush St.
Post Office Garage. 620 Jessie St.
Post-Taylor Garage. 530 Taylor St.
Ray Alexander Garage. 2360 Post St.
St. Francis Garage. 1240 Post St.
St. George Garage. 410 Bush St.
Sterling Garage. 3345 20th St.
The Hub Garage. 1663 Market St.
U. S. Garage. 750 Bush St.
Temple Garage. 644 Geary St.
Wilson's Garage. 3708 Geary
S. & M. Garage. 1220 Golden Gate Ave.

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950 Van Ness Ave.
Earl P. Cooper. 1336 Post St.

Sanger. J. M. Bruere Ford Garage

San Bruno. Cabin Garage

San Jose. Hotel Montgomery

San Jose. Hotel St. James

San Jose. Hotel Vendome

San Jose. Benson & Weaver Garage

San Jose. Sloan's Garage

San Jose. Letcher Garage

San Jose. Fritsch & Molitor Garage

San Juan. Hotel Mission

San Leandro. Service Garage

San Martin. Hall Bros. Garage

San Mateo. Sunshine Garage

San Pablo. San Pablo Garage

San Rafael. Hotel Rafael

San Rafael. Thayer's Garage

San Ramon. San Ramon Valley Garage

Santa Clara. T. & D. Garage

Santa Cruz. Riverside Hotel

Santa Cruz. Casa Del Rey Hotel

Santa Cruz. Piedmont Court Hotel Apartments

Santa Cruz. St. George Hotel

Santa Cruz. Cedar Garage

Santa Cruz. Mission Garage

Santa Cruz. Rudolph & Bielar Garage

Santa Rosa. Hurd Storage Battery Co.

Santa Rosa. Santa Rosa Garage

Santa Rosa. Crown Machine Works Garage

Santa Rosa. Grand Garage

Santa Rosa. Occidental Hotel

Santa Rosa (near). Petrified Forest

Saratoga. Russell's Garage

Sausalito. Sausalito Service Garage

Scotia. Scotia Garage

Sebastopol. Grand Garage

Selma. George Jeezen's Garage

Shaata Springs. Shaata Springs Hotel

Sierraville. Campbell Hot Springs

Siscon. Northern California Motor Co.

Siscon. Park Hotel
Soledad. Johnson Bros. Garage
Sonoma County. Mark West Springs
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Sonoma County. Skaggs Hot Springs
Sonoma County. The Geysers
Sonoma. Bear Flag Garage
Sonoma. Opera Hall Garage
Soquel. Soquel Garage
Stockton. Lincoln Hotel
Stockton. Hotel Philson
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Stockton. Studebaker Garage
St. Helena. Napa Valley Garage
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Ukiah. Cecile Hotel
Ukiah. Palace Hotel
Ukiah. Ukiah Garage & Vulcanizing Co.

Vacaville. Hotel Vacaville

Vacaville. Vacaville Electric & Machine Co.

Vallejo. Hotel Solano

Vallejo. Central Garage

Vallejo. Model Garage

Vallejo. Service Garage

Vallejo. Six Minute Ferry

Vichy Springs. Vichy Springs Resort

Visalia. Johnson Hotel

Walnut Creek. San Ramon Valley Garage

Walnut Grove. Brown Hotel

Walnut Grove. Delta Garage

Walnut Grove. Walnut Grove Garage

Watsonville. Appleton Garage

Watsonville. Appleton Hotel

Wawona. Wawona Hotel

Weaverville. New York Hotel

Weaverville. W. A. Day Garage

Weed. Sullivan's Garage

Wheatland. State Highway Garage

Wilbur Springs. Wilbur Hot Springs Hotel

Wildwood. Wildwood Resort

Williams. Hotel Williams

Willits. Hotel Willits

Willits. Little Lake Garage

Willits. Wagner Garage

Willows. L-K Garage

Winters. Hotel Winters

Winters. Winters Garage

Woodland. Electric Garage Co.

Yosemite. Camp Curry

Yosemite. Yosemite Lodge

Yosemite. Glacier Point Hotel

Yosemite National Park. Lodge in Mariposa Big Tree Grove

Yreka. Yreka Auto. Supply Co.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912

Of MOTOR LAND, published monthly at 1628 Van Ness Avenue, San Francisco, California, for April, 1922.

State of California. }
City and County of San Francisco. } ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared Mary Bates, who, having been duly sworn according to law, deposes and says that she is the business manager of MOTOR LAND, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form.

- That the names and addresses of the publisher, editor, managing editor, and business managers are:
Publisher, California State Automobile Association, Inc., 1628 Van Ness Avenue, San Francisco, California.
Managing Editor, D. V. Nicholson, 69 Palm Avenue, San Francisco, California.
Business Manager, M. Bates, 2990 Clay Street, San Francisco, California.
- That the owners are: California State Automobile Association, Inc., 1628 Van Ness Avenue, San Francisco, California. President, George S. Forrester, 269 Potrero Avenue, San Francisco, California; treasurer, Edwin F. Merry, 200 Van Ness Avenue, San Francisco, California; secretary, D.E. Watkins, 1628 Van Ness Avenue, San Francisco, California.
- That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by her.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is..... (This information is required from daily publications only.)

Sworn to and subscribed before me this 21st day of March, 1922.

M. BATES, Business Manager.

(Notarial Seal)
E. C. CONROY, Notary Public in and for the City and County of San Francisco, State of California. (My Commission expires May 14, 1922.)

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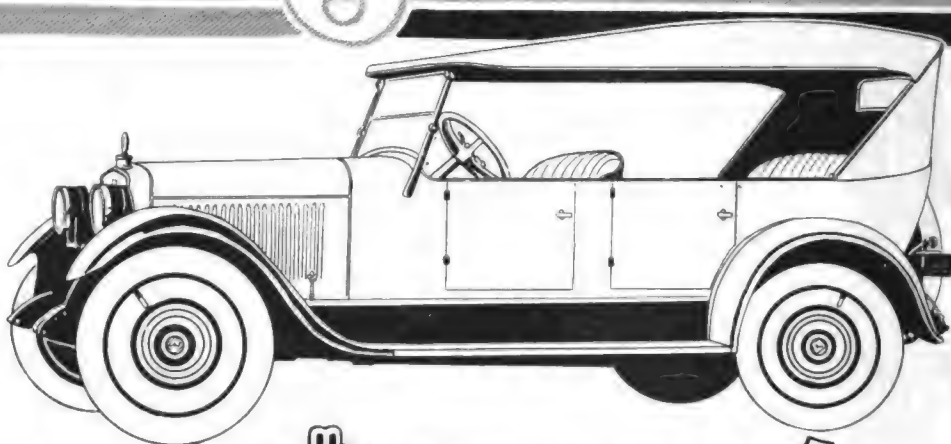
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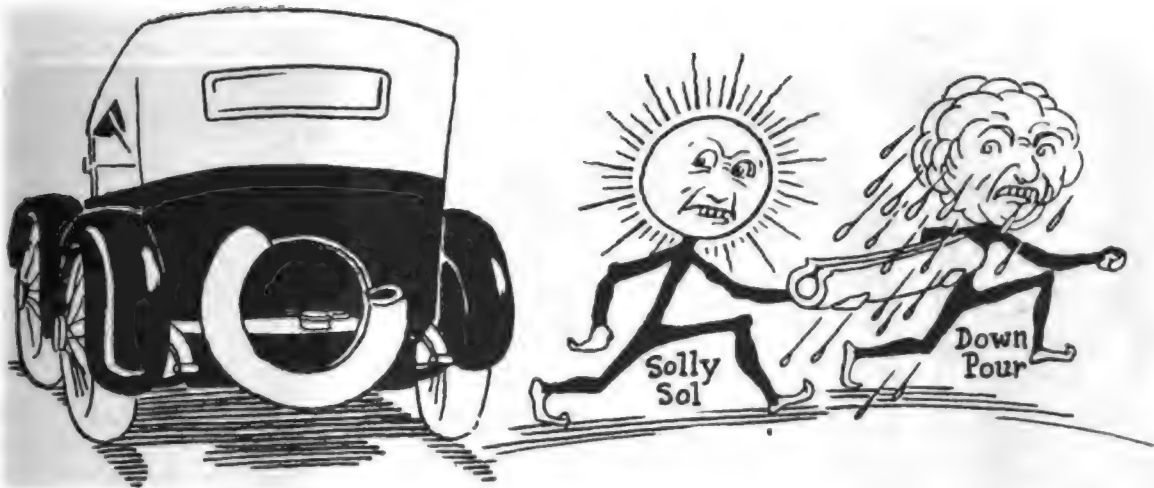
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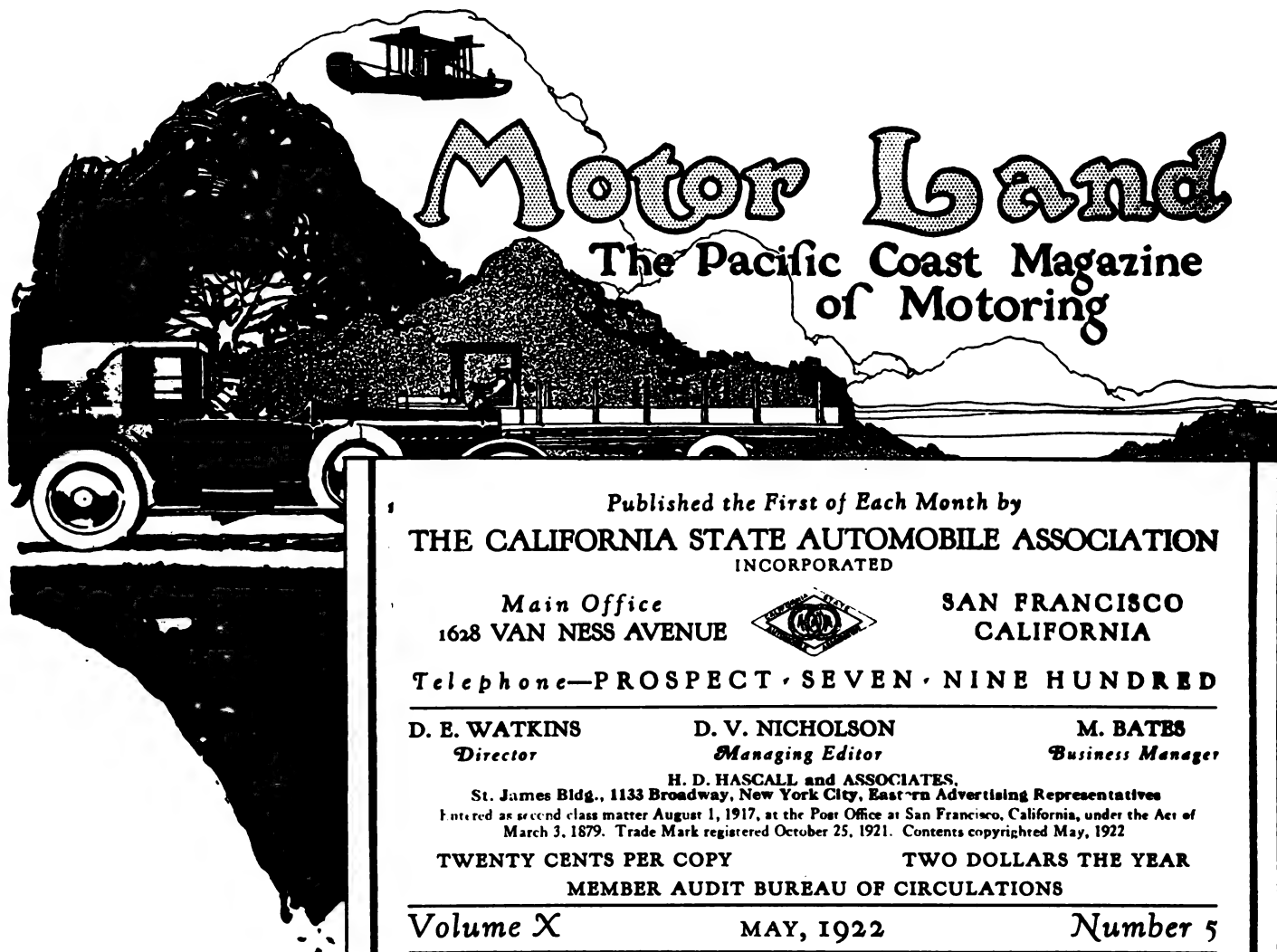
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Volume X

MAY, 1922

Number 5

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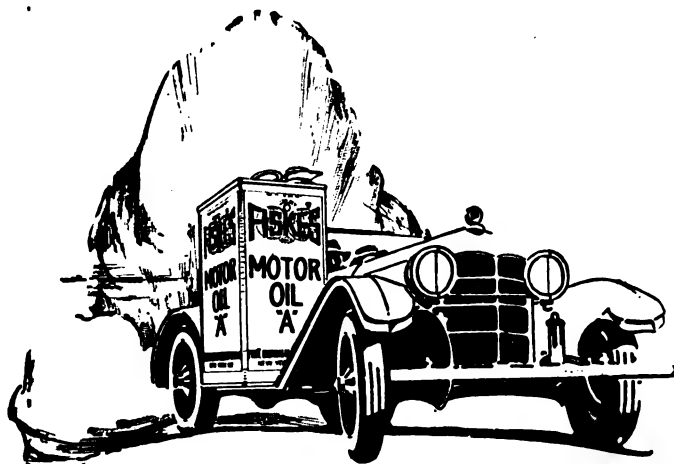
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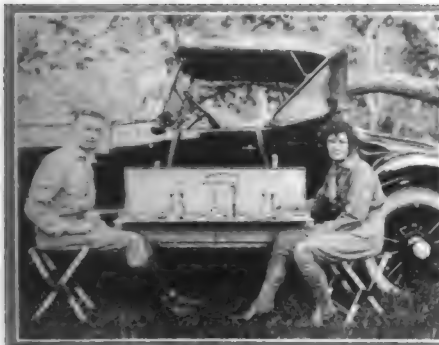


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HONOLULU, T. H., Sept. 13, 1921

Coast Tire & Rubber Company,
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Oakland, Calif.

Gentlemen:

"Up to the morning of September 10th, a 34 x 4½ Coast Cord had travelled exactly 7,319 miles, on the rear wheel of a Hudson Super-Six Rent Car, which travels daily between Lahaina and Wailuku on the Island of Maui, T. H., a distance of some 22 miles each way, over one of the roughest roads on the Island. (When we say "roughest" - we mean that the tire had to travel over seven miles of mountainous road, which is nothing better than loose rock.)

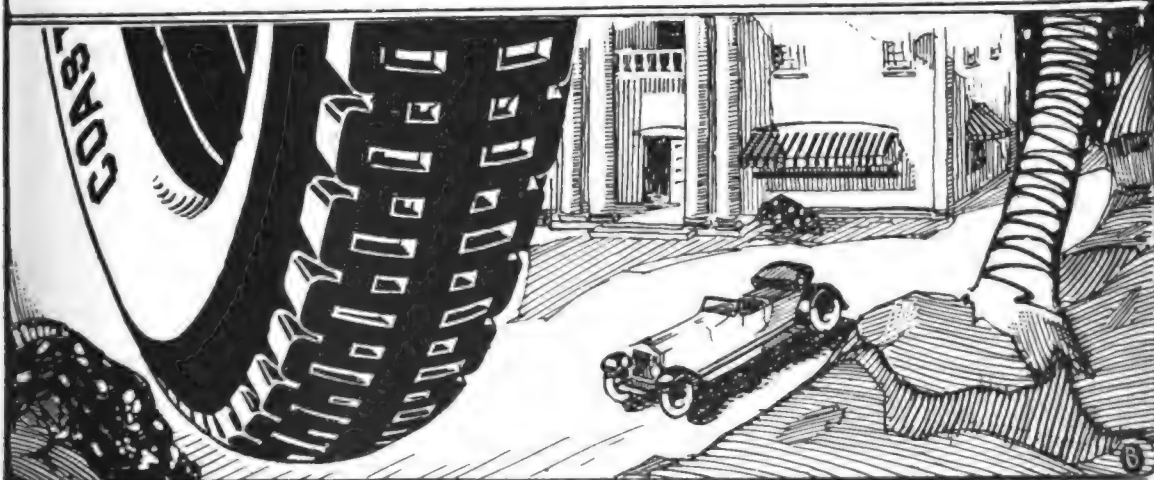
One might say that this is an official test made under the auspices of the Royal Hawaiian Sales Co., Ltd., Territorial Agents for Coast Cords.

Very truly yours,

ROYAL HAWAIIAN SALES CO., LTD.

BY J. L. Fleming
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*"You can steer it with one finger
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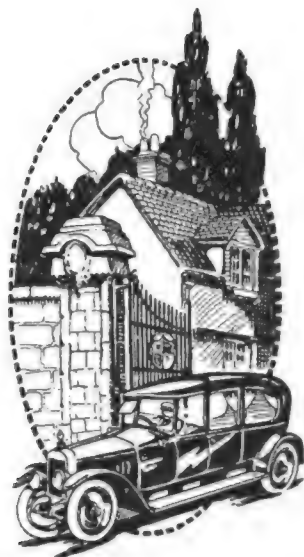
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CURRENT COMMENT



The Call of the Open Road

THE annual Call of the Open Road festival celebrated by California motor car dealers proved one of the events of the year. It brought great crowds to the automobile row; it sold a great number of motor cars; but best of all it inculcated into the minds of thousands of Californians who attended the festival an idea, and brought a message that will mean much toward better highways, increased touring and a better knowledge of the beauties of California.

The Call of the Open Road does not end with a series of exhibitions of camping scenes in an automobile salesroom; it does not close with a contract of sale on an automobile; but it "carries on" through the months and years a meaning that means much to the development of the State.

There are hundreds, yes, thousands of Californians who are yet to become acquainted with their own State. And in this land of magnificent distances the motor car is practically the only means by which the contrasting scenic attractions of California can be brought before the people.

But, outside of exploiting the beauties of California, outside of pouring a horde of tourist travel into the Sierra Nevadas and along the streams and into the canyons of the undeveloped portions of the State, the Call of the Open Road means something more.

It means more touring, and in more touring it means a more democratic population. And in the development of the democracy of the highway comes a kindly feeling toward one's fellow man that tends to make the province of motoring more safe and sane.

With this great development in the "touring urge" there comes a spirit of pride in California that bodes well for the development of the State. No motor tourist can travel into the

Yosemite or over the hump of the Sierras into the region of Lake Tahoe without being inwardly urged to write all about the glories of it in his next letter "home to the folks." And the next train or at least the next season will see "the folks" out here on the Pacific Coast eager to join in the throng that romps over the California foothills.

The motorist who has absorbed the true spirit of the Call of the Open Road will heed the legislation that has come to make the highways safer for him and for others. He will abide by the speed laws; he will not be constantly attempting to steal the right of way from the other fellow; he will be a more careful driver; and as a result there will be fewer accidents and consequently fewer stringent laws.

After all, the people make the rules and regulations for their own guidance, and it is the motorist himself who, by his actions, contributes to the drawing up of the very legislation that he may at times try to dodge.

If every motorist sought only for speed, as many did in the early days of the industry, we would have a set of blue laws that would compel us to creep along and would take all the joy out of the open road. But we have a speed law that allows ample range for pleasure, and he who breaks it deliberately is simply piling up trouble for himself and others who may follow.

A little more care at crossings means a big drop in the accident toll. A little more care in attention to the brake bands, a little time spent in looking over the car, all these things mean safer and saner driving and a more enjoyable world for the motorist.

The insane desire to speed beyond the law is a selfish desire and it has resulted in drastic action by the State

Motor Vehicle Department in revocation of drivers' licenses right and left.

We do not find the selfish motorist only in the wilds. He is ever with us in our cities. He is the one who cares not a whit about whether or not he makes driving difficult for the other fellow. He is the road hog. He is the speeder. He is the corner cutter; he is the one who forgets to signal or doesn't know how; he is the personification of the traffic rule violator.

How can we get rid of him? Jail sentences have been used as deterrents but they often land in the wrong place. Sometimes they even become copy for press agents to impress upon the public the cruelty of the courts. Heavy fines have hampered his operations. But in order to get rid of him altogether Public Opinion will have to step in. If Public Opinion didn't want to quench its thirst now and then, there wouldn't be any bootleggers or at least they wouldn't be able to make a living. So with the traffic violator.

The papers are too crowded with accounts of motorists who run down pedestrians or crash into other motorists and speed on without offering any assistance. There is no excuse for this sort of thing and it has a tendency to cast a slur on motoring in general which does a great deal of harm.

Let us all, as safe and sane motorists, remember, that after all, the full enjoyment of the country through which we pass cannot be secured when we feel the stress and strain of the high speed at which we travel. And, too, the other fellow has some rights, and these we ought to observe if we would expect a well-ordered world.

The touring season is here and the Call of the Open Road is stronger than ever before. Let us drink in the real spirit of transportation and enjoy this glorious Western out-of-doors.



A study in reflection in the valley of Yosemite.

YOSEMITE AND THE MARIPOSA BIG TREES

Sublime Spectacle of the Valley From Inspiration Point One of Western Wonders

THE wonders of the Yosemite Valley and the Mariposa Big Tree Grove have been told around the world. There is perhaps no single district in the United States, Niagara Falls excepted, that is better known to the European traveler than the California canyon which Captain Bolling discovered in the early fifties.

Yet there is many a motorist, many a California motorist, who has yet to make his first visit to that famous resort. It is not an easy motor trip, nor is it a difficult one. Any driver of ordinary caution can be as safe on the highway into the heart of the Sierra region as he might be on the pavement of the city.

Three ways lead to the valley. The first road to open is the so-called Wawona Road, named from the grove of gigantic redwoods that form a portion of the park reservation. The second is the Coulterville, and the third the Big Oak Flat. The latter route traverses much of the territory about which Bret Harte and Mark Twain wove their tales of early California, and it joins the northern exit of the park, the Tioga Road, which carries the traveler to Lake Tahoe.

The Wawona Route

The Wawona route brings the motorist into the valley over the very

rim at a favorite vantage ground, Inspiration Point. The view from this craggy eminence cannot be surpassed. No other station about the precipitous walls of Yosemite grants the onlooker the sublime spectacle presented here. No artist could conceive a grandeur such as this, and the camera fails to convey the delicacy of outline, the intricacies of contrast and the prodigies wrought by light and shade. Even the floor of Yosemite itself has nothing more beautiful to offer than this.

The valley of Yosemite is about seven miles in length and between a half-mile and a mile in width. The great glaciers which were the natural sculptors of the walls of the valley have left a myriad of fantastic forms to contribute to the awe-inspiring panorama.

On the floor the Merced River flows, a scintillating ribbon of beauty, through green meadows dotted with all the wildflowers of the Sierra country. The trees of the Yosemite are one of its greatest attractions, and fern and moss about the scores of springs make up a fitting foreground for the glorious heights above.

The traveler in the Yosemite may drink from springs as alluring in their charm as any of those made famous in Greek legend by the pastoral elegies of Theocritus or the lyrics of Anacreon.

Fern Spring on the main road of the valley is one of these.

The Waterfalls

And then the waterfalls, their voices blending and echoing through the canyon, create an harmonic atmosphere that is entirely atune with the sublimity of the prospect. A hundred trails lead the visitor to vantage points in the many canyons which act as feeders for the Yosemite. Glacier Point, Vernal and Nevada falls, the glimmering whiteness of Illilouette, all are easy trips for the hiker once he has reached the valley floor.

A short side trip on the Wawona Road leads the motorist to the Mariposa grove, where some of the oldest and largest of the redwoods of California are to be seen. This was the first of the great-tree groves to be opened to tourists, and, in spite of the fact that there are larger tracts with larger and older trees—the Sequoia National Park, for instance—it is the Mariposa grove which has come in for the greatest publicity on account of its being open to travel earlier.

One tree, through which you may drive your car with ease, was a great attraction of the stage-coach days, and photographs of this mighty redwood arch used to have a prominent place in the school geographies.



A glimpse of Emerald Bay, Lake Tahoe, from the mountain highway.

TAHOE, THE "LAKE OF THE SKY"

Emerald Gem in Mountainous Setting—One of the Favorite Touring Grounds of California

THERE are four routes to Tahoe, the "Lake of the Sky." Two of these follow the old emigrant trails; a third is the route of General Frémont and the scout, Kit Carson; and the fourth is the connecting route between Yosemite and Tahoe, the Tioga Pass Highway.

On the Placerville route to Tahoe you will find a thousand and one signs that mark the prominent stopping places in the early days. "Here stood the saloon," is one legend, and another reads, "Here stood the twenty-mile house"; here you may find history on the signposts themselves, and a trip over the Placerville route will give you an inside glance at the intimate chronicles of California which you can secure in no other way.

On the Auburn route to Tahoe you go over the road traveled by the ill-fated Donner party and past Donner Lake, second only to Tahoe in the beauty of its waters and the attractiveness of its setting. On the Auburn

route you pass through Emigrant Gap and Truckee, viewing the lake from the northern end. On the other hand, if you visit Tahoe by the Placerville route your first vision of the lake is as you come over the grade at the southern end of the lake. Both "first sights" of Tahoe have their particular attractions. You have not found all that there is in the panorama of Tahoe until you have gone and come both ways.

A Different Highway

A different kind of highway is that which follows in the footsteps of Frémont and Kit Carson. You ascend to the highest elevation of any route in the Sierra country, but the highway follows the hogback of the mountain and there are only a few hundred yards where the way is at all narrow or difficult.

On this route you pass by Silver Lake and through the valleys of Faith, Hope and Charity. This route joins

the Placerville Highway at Meyers, only a short distance from Tahoe itself.

Lake Tahoe has to be seen often to be thoroughly appreciated. The tourist who goes simply for an instant's glimpse of this great body of water is usually disappointed and returns to say that it has been overestimated. But he who pauses and camps on the rim of blue and watches the colors of the day rise and fall in the beautiful silent waters of Emerald Bay will always recall the hours at Tahoe as a most pleasant memory. Like Wordsworth's Windermere, where the poet found more joy in the remembrance of its beauties than in their actual prospect, so will it be to the tourist at Tahoe.

The lake itself is lined with summer camping resorts, but the High Sierra country is near at hand and offers an enjoyable retreat for those who wish to get away from civilization and commune with Nature and with Nature's own.



The picturesque stream that recalls the Russian settlements in California.

THE RUSSIAN RIVER COUNTRY

"Vacation Land" of the Bay Cities Charms Thousands of Visitors Every Year

PERHAPS the favorite vacation ground for the bay cities is the district that extends west from Santa Rosa in Sonoma County and which has for its radiating center the channel of the Russian River.

This is one of the most beautiful of all the streams of California, its banks being heavily wooded and fern and bracken adding a great deal to the natural beauty of its shores.

Canoeing, swimming and fishing are popular sports in this region, and during the summer months the popular pools are usually crowded with swimmers.

Resorts by the hundreds line the banks of the river, and many a resident of a bay city has his or her cabin tucked away in the mountain forest overlooking the calm waters of the slow-flowing river.

Jenner-by-the-Sea

The outlet of the river is at Jenner-by-the-Sea, one of the prettiest spots on the Coast. Here a great sand bar regulates the flow of the river into the ocean, and an island in the center of the great lake at the mouth is heavily wooded and offers an extremely attractive panorama to the motorist passing by on the river road.

There are numerous species of trees

in this heavily wooded district, the redwood being common, although there are no trees along the river banks which might be classed as gigantic.

The Bohemian Grove

The Bohemian Club of San Francisco has a retreat in the Russian River country, and every year a pilgrimage makes its way there to witness the Bohemian grove play and high jinks which are a feature of the club year.

The highways that approach and follow along the banks of the river are kept in excellent condition during the touring season, and although they are narrow there is little danger to the motorist provided he drives with care and does his duty with horn and steering gear.

Quiet Retreats

There are thousands of quiet retreats where picnic parties can be all to themselves, and there is ample room for all the world and his wife if they see fit to come.

The Russian River country derives its name from the Russian expedition from Alaska sent out by the Imperial Government of the Czar to promote trade with the States and to develop

the fishing and trapping industries on the California coast. As an expedition of profit it was a failure but as an addition to the romantic history of California a decided success.

The relics of the Russian occupation of the early days of the nineteenth century are still to be seen at Fort Ross, where the ruins of the ancient barracks and the old Greek church are still standing.

The mission church at San Rafael and the Mission of Sonoma are said to have been established by the Spaniards to resist the inroads of the Russians on the possessions of Spain in California.

There is a charm about the Russian River country that brings the visitor back year after year. Its cool and shady groves, its wildflowers, its quiet pools and its democratic spirit all contribute to make it one of the most attractive of resorts for vacation time.

As a country for motor touring it is unsurpassed. There are accommodations to be had at almost every turn in the road; and the motorist does not necessarily have to plan on stopping at one place or another, but he may simply drive on and on through a wilderness of beauty and halt only when his weary muscles or the descending sun calls a halt.



Sunlight and shadow on the lucid waters of Clear Lake.

LAKE COUNTY, THE CALIFORNIA "SPA"

Clear Lake as Attractive as the Famous Windermere of the Poet Wordsworth

THERE is a salubrious air about Lake County that invites the traveler. It bears a great resemblance to the lake district of England in its colorful panoramas and has yet to be developed to its maximum as a vacation resort for residents of the bay cities.

There is a Vergilian air about the borders of Clear Lake. Konockti or Uncle Sam Mountain rises precipitously from the very edge of Soda Bay and towers over the lake at about the same elevation as Vesuvius over the Bay of Naples. From its summit, 3,000 feet above the lake and 4,200 feet above the sea, an unequaled panorama extends.

On the east are the mountains of the Sierra Nevada with their snow-capped peaks; on the west are the heights and canyons of the Coast Range that extend to the sea; and below to the north and east lies Clear Lake, described as "a sheet of silver embroidered with a golden fringe." Southward are to be seen Mount St. Helena and Mount Cobb, Mount Diablo and Mount Tamalpais. Sunsets in Lake County are a marvel of exquisite color, and if you happen to be on top of Konockti

when the sun is sinking into the ocean, you will experience one of the most glorious panoramas which Nature can portray.

Soda Bay derives its name from a geyser which discharges on the surface of the lake half a million gallons of pure soda water every twenty-four hours.

Picturesque Islands

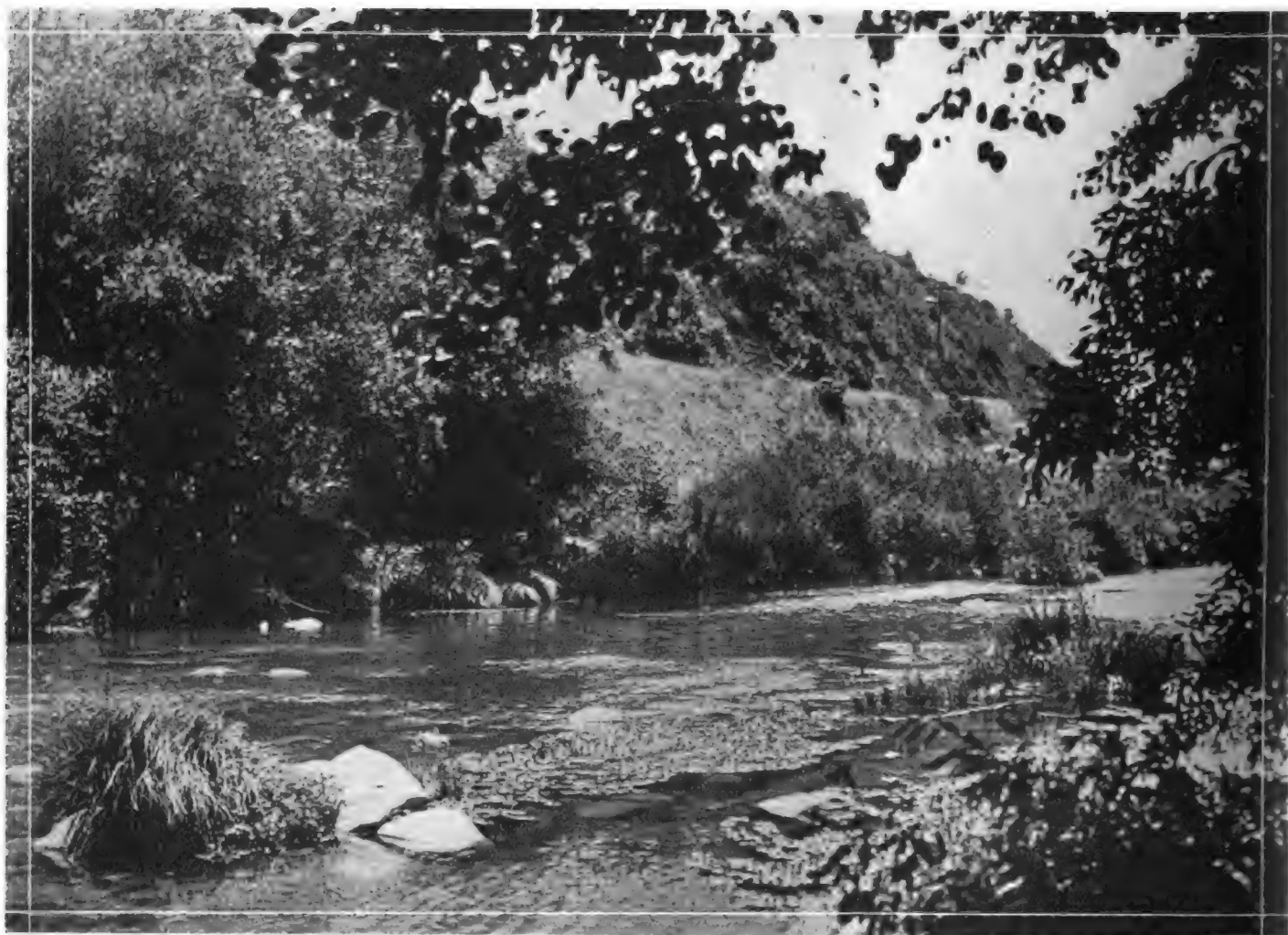
One of the features of the lake and one which adds greatly to its beauty is the number of small islands scattered about its surface. The largest of these is Elembenden, the Indian name for Paradise. Another is called Hoyemden. The waters of the lake flow into Cache or Hidden Creek, which in turn discharges into the Sacramento River.

On the road between Ukiah and Lakeport, about twelve miles from Clear Lake, are three Blue Lakes, 2,500 feet above the sea. The mountains here are between four and five thousand feet in height and form a canyon of indescribable beauty. The almost fathomless depth of the little cluster of lakes makes the color range from a sapphire to a deep azure, and the reflection of shadows from the steep cliffs adds to the beauty.

The heights of Wordsworth's Helvelan or Old Skiddaw give no prettier picture than the mountains that surround Clear Lake. The descent down the mountain side over the Bartlett Springs Road to the shore of Clear Lake is a continuous panorama of beauty. Lake County is covered with resorts of every description, and this, too, makes motoring in that district an added pleasure.

The approach to Lake County can be made from Vallejo and the paved highway to the toll road over Mount St. Helena, or by way of Ukiah and Blue Lakes, or from Williams and the Ukiah to Tahoe Highway over the ridge to the county line. All three have their special attractions, but the most common route is to enter by way of Ukiah and return by way of Mount St. Helena.

As the road situation improves in Lake County and the miles of paving become more and more, the touring attractions of that district will prove more and more alluring. There is nothing like it elsewhere in California in the way of scenery, and thousands of motorists spend their summer vacations there now.



Along the Feather River.

FEATHER RIVER DISTRICT A LAND OF BEAUTY

Sierra Nevada Stream One of the Most Beautiful in All California

Not far away from the land of Lassen and the inferno of the geysers and devil's paint pots that mark the still active remnants of the ancient volcanic peak, lies a subtly attractive vacation land, the Feather River country.

The Feather is one of the most beautiful of the rivers of the Sierra Nevada. With its north fork, middle fork, the east branch of the north fork and the Spring Garden and Spanish creeks, the Feather River covers almost the whole of Plumas County, and is well stocked with the gamey trout. In fact, the Feather River country is one of the best districts in the State for the follower of the sport of Izaak Walton, as any angler knows.

The road from Marysville, via Honcut, Camptonville, Downieville, Sierra City and Sierraville, threads some of the loveliest of the regions of the Sierras. The rolling hills of the upper Sacramento Valley grow steeper as the motor car winds steadily onward, and the trail grows narrower while the air takes on the chill of the snow-bedecked peaks in

the horizon line. A moving picture of an innumerable set of reels flashes by. At one point you may be held up by a band of sheep ambling along the highway. At another bend in the road you may come on a herd of cattle on their way to market. You seem to be passing from the confines of civilization into a wilder, greater sphere.

Fishing Attractions

Gold Lake in the Feather River country is one of the particular attractions of the district. There are fish, too, aplenty in this little fairy cup of gold, and they'll take anything you have to offer, from fly to beetle. Then at Indian Falls you will find another pool where you may cast in a line with an assurance that the bait will be speedily taken.

The Feather River country has not been developed as a vacation land for Northern California to the extent that it will be when it is made more accessible. Now it is dependent on the season's conditions and the melting of the snow for the opening of motor

traffic, but some day a ribbon of concrete highway will offer an all-season lure to that part of the world.

Gateway to Modoc

Beyond the Feather River country you may go into the wilds of Modoc County, where the Indians kept the armies of Uncle Sam busy during the thrilling days of the Lava Bed War. This is almost virgin territory for the motor car, and for the tourist who likes nothing better than to invade a place where motor cars are comparatively unknown it offers a fertile field.

Then, too, it offers a gateway to Lassen Volcanic Park and the picturesque regions about the base of the mountain.

There are innumerable places to accommodate the motorist through the Feather River country. Summer resorts varying from a high-class hotel to the simplest of camping outfits furnish the traveler with opportunities to pause en route and drink in some of the glories that Nature has prepared for him.

The enchanted aisles of the Giant Forest of Sequoia.

SEQUOIA AND GENERAL GRANT NATIONAL PARKS

The Home of the Largest and Oldest of All Living Things, the Redwoods

SEQUOIA and General Grant National Parks are perhaps the most approachable by automobile of any of our national reservations. Entrance to Sequoia, the larger of the two, is through Visalia and Three Rivers and then through the canyon of the Kaweah River.

The background of mountains is made up of the highest peaks of the United States, culminating in Mount Whitney, which towers 14,501 feet above the sea and which looks down on the grand canyon of the Kings and Kern rivers.

The Sequoia Park derives its name from the *Sequoia Washingtoniana*, famous as the Big Tree of California. There are more than a million of these trees scattered about the 252 square miles of the reservation, and 31 miles away by trail and 85 miles by automobile lies the General Grant National Park, which contains four square miles of groves second only in size to those of Sequoia.

In the center of the Sequoia reservation lies the Giant Forest of 3,200 acres, containing 5,000 redwoods which are over ten feet in diameter. The largest tree in the world, the General Sherman, is found here. Its diameter is 36.5 feet and it is 279.9 feet in height. Taller than the General Sherman but less in girth is the McKinley Tree, 290 feet in height and 28 feet in diameter.

Seven Camp Grounds

Within the boundaries of the park are seven camp grounds, with plenty of room for all who might come. Moro Rock, 6,719 feet high, is one of the features of the park. From its summit the eye has an uninterrupted view from the snow-capped Sierras to the sea.

The narrow winding road over which the approach is made to the park is thirty miles in length and is kept in good shape by the Government. It clings to the sides of precipitous cliffs beneath great boulders that threaten like the mythical Symplegades to end their ceaseless yawn and swallow the

unwary motor car as it crawls through the narrow fissure.

A colorful river, splashing over great rocky islands, forming cascade after cascade of white foam in its mad course to the sea, lies far below the road and offers ample opportunities for the angler to make good on a limit catch of trout.

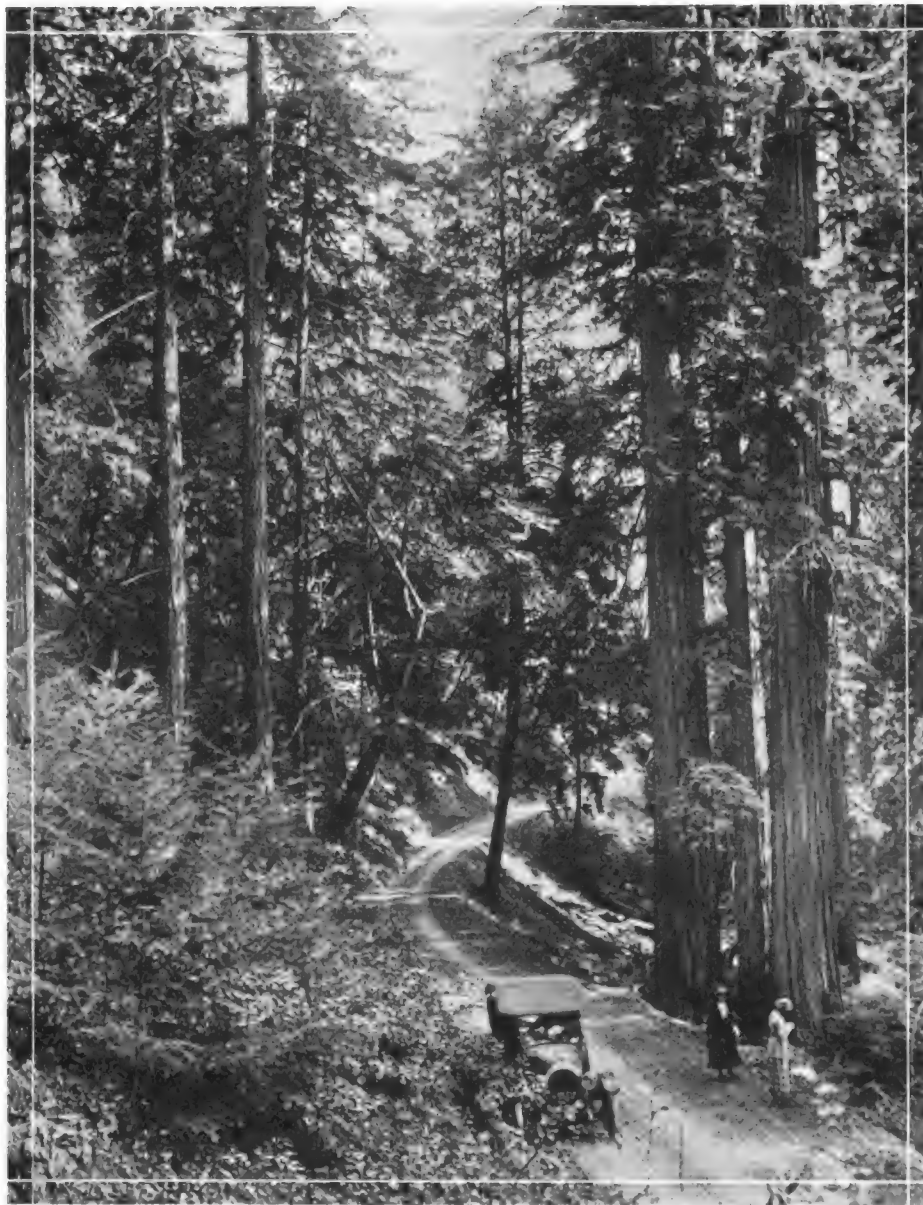
Mountain Background

The background of mountains, mountains on whose bald brows there is always lingering a baptism of snow, is as impressive as are the great trees that line the canyons and meadows at the base. Fir and pine and cedar as well as the gigantic Sequoias are to be seen, trees that were well-grown saplings in the days of the earliest of the Pharaohs and which were centuries old when Babylon was in its prime.

The Kaweah River and its canyon afford a favorite camping spot for thousands of motorists on their way to the giant forest.

THE CALIFORNIA REDWOOD HIGHWAY

Mendocino and Humboldt Counties Offer Rare Lures for the Hunter and the Angler



Among the redwoods on the highways of Humboldt County.

SOME day the highway that extends from Sausalito to Crescent City will be one of the most popular of all the scenic motor drives in California. It follows the coast line almost all the way and winds in and out of the canyons of the Coast Range. Some day it will be paved for its entire length. Then it will open a country that has been growing more and more to be one of the most popular for vacations among the motorists of California.

It possesses a wealth of scenery, particularly after it reaches the canyon of the Eel River, and it passes through some of the most extensive and some of the finest groves of redwood trees that the State can boast. Its principal drawback lies, not merely in the lack of adequate road improvements, but in

the lack of accommodations for long distances in the mountains of Humboldt and northern Mendocino County.

A bridge over the Klamath is one of the keys to a great wealth of travel from Oregon and the Northwest. Now the inadequate ferry facilities, relying on tide and weather conditions, make the coast trip to Oregon one of probabilities rather than certainties.

Willits is the real gateway to the land of the northern redwoods. From this point radiate laterals that lead to the coast as well as scores of trails into the country of big game where bear and deer are plentiful.

This land is a paradise for the hunter and the angler—this country of forest and stream and limits are common.

Within a few short miles of Willits

you find yourself in the depths of a forest. Oaks, centuries old, line the way, and redwoods whose lifetime covers almost the lifetime of the Coast Range itself. The redwood aisles resemble nothing so much as a great cathedral; the straight Ionic columns, without leaf or bough for a hundred and more feet straight up, give an awe-inspiring effect that can hardly be described.

Winding through these quiet dusky canyons is like traversing a strange enchanted forest of medieval legend. Fern and bracken and dense foliage are on either side of you, and the foliage above shuts out the sky.

On the floor of the great gorges of the Eel River the Eel and its tributaries wind, tumbling over great boulders and now and then forming deep pools in which the trout leap and gambol as the car whirs by.

Fish Here Aplenty

Here is the almost undisturbed haunt of the trout and the salmon. You can find turtles and crawfish, too, and there's plenty of fish for everybody. The sound of the motor car stirs up the life in the brush beside the highway. Rabbits scamper across the way, and quail in abundance, almost tame enough to be caught with the hand.

There are many sharp turns on the road, but the highway during the touring season is thoroughly safe with sane driving. Berries of all sorts are to be found in the canyons. These formed one of the chief articles of diet for the Indians who formerly inhabited the region.

Lone cabins, Indian trails, deer paths and fish-laden streams—what could one wish for more in the way of a vacation land of pure unadulterated happiness?

Off the coast of Point Arena there are many wild vistas of the sea that contrast sharply with the forests of the interior. The waves have hollowed out great chasms and archways. This is one of the most dangerous places on the northern coast for ships, and many a wreck has been recorded in this vicinity.

The redwood forests continue in many places almost to the edge of the sea, and the buffeting of the sea breezes causes them to assume strange shapes like the cypress trees in the vicinity of Monterey. The combination of forest and stream and sea is a wonderful sight, and the completion—the paved completion—of this California Redwood Highway will bring one of the days of congratulation to the State.



Mount Shasta in midsummer looming over a field of bloom.

SHASTA, SENTINEL OF THE NORTH

Barren Peak Marks Gateway Through Siskiyou Into Oregon

THE tourist who enters California from the north has an opportunity for a glimpse of hoary Mount Shasta as it emerges from the Siskiyou and stands as a white sentinel near the Oregon line. But Shasta improves on acquaintance, and the motorist who drives northward has a better opportunity of becoming acquainted.

If you should reach the little town of Sisson during a spring blizzard, as the writer did once, you would be rewarded with one of the grandest sights that Nature has prepared for the vision of mankind. The whole peak was suddenly revealed and as suddenly vanished, leaving only a shadowy outline of jagged rock looming up against the sky.

All the landscape was in the dazzling white of winter, and every tree was in holiday array. On the branches the snow hung like cotton. The little

houses, with icicles hanging from the eaves, looked like Christmas cards, and a passing sleigh, to make the picture more complete, added its accompaniment of sleigh bells.

Highway Improved

The highway to the foot of Shasta has been much improved during the last year, and as it is the main-traveled route between California and Oregon it will probably be in the best of shape hereafter. It passes through one of the scenic regions of the north country, threading as it does the canyons of the upper Sacramento and the Klamath district and passing through the little town of Shasta, once a far-famed town of the mining days.

It was Mount Shasta that gave to the Indians of the Northwest their ideas of a mighty spirit that brooded over the western coast. The peculiar way in which the clouds drift over and

suddenly reveal the white sentinel of the north had a great influence on the superstitious minds of the Shasta Indians, and there are hundreds of legends of the beneficent and awe-inspiring spirit of the mountain, whose pleasant or gloomy aspect was looked on as an omen of good or ill.

A Wonderful Sight

There is no more wonderful sight in California than the snow-garbed Shasta on a clear, sunshiny day. Its white coat fairly dazzles the eye; and standing as it does distinct from its brother peaks of the northern mountain chain it has the more imposing appearance.

The summer time is perhaps the best season of the year to make its acquaintance, but it can be reached in the winter even after the heavier falls of snow. In the summer season, guides can be secured and the trip up the side of the peak may be made in safety.



Main street of San Andreas with its relics of '49.

THE COUNTRY OF BRET HARTE AND MARK TWAIN

Quaint and Curious Scenes to Be Found in This District That Recalls the Days of '49

THE Bret Harte country lies between Placerville, formerly known as "Hangtown," and Sonora, and embraces a score of little villages, "cities that were" that still bear much of the same aspect as when they were peopled with the characters whom Harte and Twain have made famous.

San Andreas was the scene of one of Mark Twain's earliest and most famous tales, "The Jumping Frog of Calaveras County." It was in the barroom of the Metropolitan Hotel, which is still standing, that the incident recorded in the story took place.

Placerville preserves in its winding streets much of the appearance of the early days, and the veranda from which Horace Greeley, then a candidate for the Presidency, addressed the miners, is still to be seen.

A few miles out from Placerville lies Coloma, where the Native Sons have

placed a monument to James Marshall, the discoverer of gold. The monument points to that place on the fork of the American River where gold was first found. A few miles from the town of Coloma is Marshall's cabin, which has been converted into a museum for relics of the days of forty-nine.

Scene of Story

In the time of Bret Harte, Coloma was a city of 10,000, but it has a census now of only a score or so. This is supposed to have been the setting for "The Outcasts of Poker Flat."

The road from Plymouth down to Sonora is not concrete pavement, but it is usually passable throughout the touring season. There is no more colorful picture in the landscape of California than the view of the Grand Canyon of the Mokelumne River, which is found near the town of Mokelumne Hill.

Amador, Sutter Creek and Jackson all recall the early days, and many an iron-shuttered house still stands that once echoed to the laughter and coarse wit of the miners of the fifties.

Near Sonora is Jamestown and Tuttletown, the former the "Jimtown" of Harte's stories, and Jackass Hill and the home of the "Heathen Chinese" are still to be found.

The Big Trees

A short trip that may be made from Angels Camp is a visit to the Calaveras Big Trees, one of the largest of the groves in California. The Calaveras grove is situated in a small valley near the headwaters of the San Antonio at an elevation of 4,702 feet. The grove includes ten trees that are over thirty feet in diameter and more than seventy that range between fifteen and thirty feet.

In the south grove there are 1,380 trees of a diameter exceeding 18 feet.

SANTA CRUZ AND THE BIG BASIN

Sea, Mountain and Giant Redwoods Included in Trip to California "Coney Island"

ONE of the best of the short motor tours offered to the resident of the bay district is that which passes through the picturesque canyons of the Santa Cruz Mountains into the Big Basin and on to the ocean beach.

The coast line, pounded by the great breakers, has a jagged artistic effect, and great caverns that moan and arch-ways through which the waves race and roar are peculiar features. Arch Rock, the natural bridge and Monument Point are all attractions that lie in the vicinity of the town of Santa Cruz.

Then within a few miles of the main highway on the Big Basin Road, are the redwoods—great trees second only in size to the forests of Sequoia and Calaveras. Here is the California Redwood Park, one of the most interesting of the reservations that attract the summer tourist. Camping ground, acres of it, and conveniences of every sort for the motor camper, these are to be found in the State's own park.

The Largest Trees

The largest trees are to be found in a private grove just off the Big Basin Highway known as the Welch grove. Here is the General Frémont Tree, 56 feet in circumference and 280 feet in height, in which it is said the officer camped when he wished to hide from the Indians.

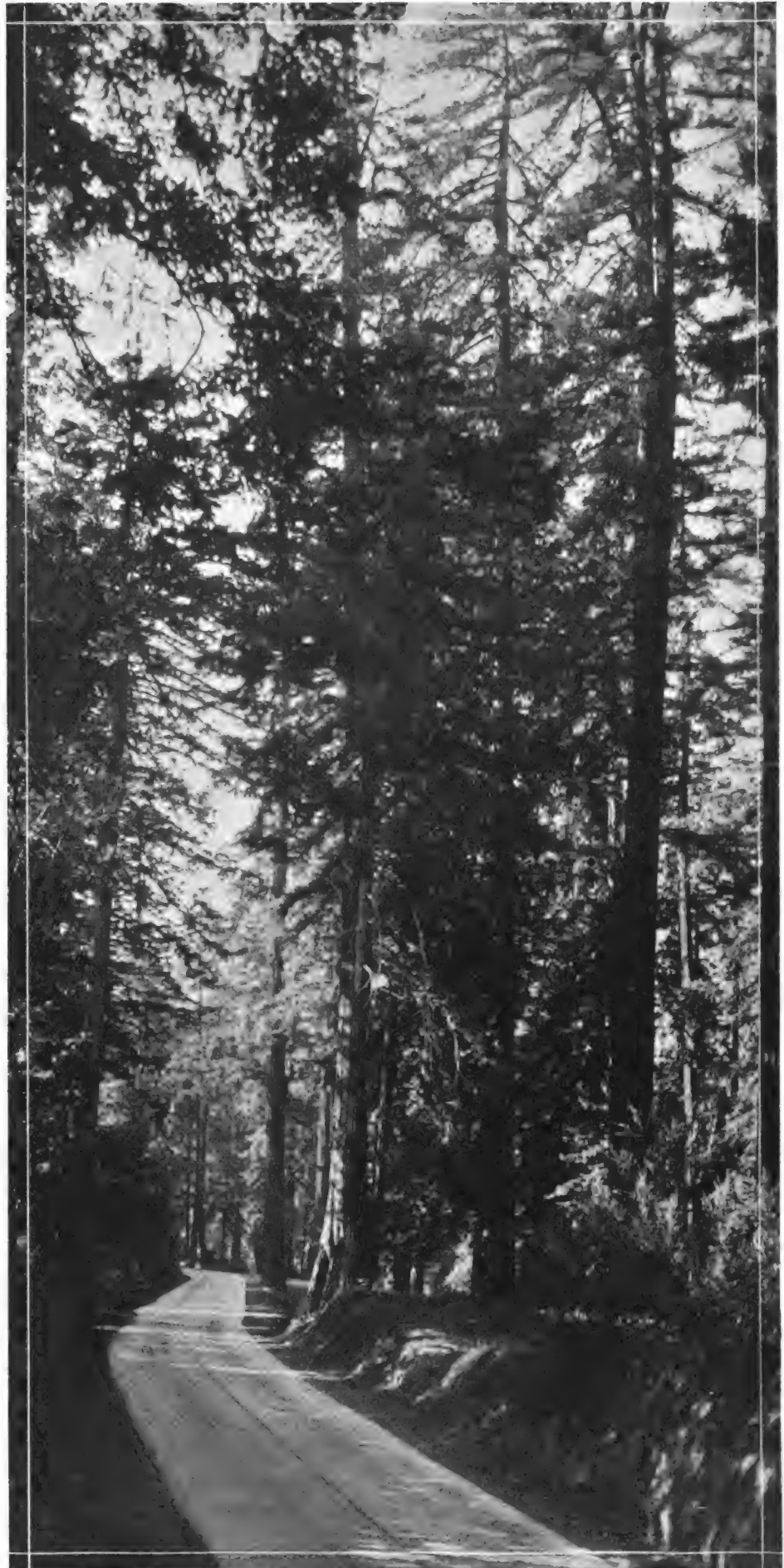
The Jumbo Tree is 52 feet in circumference and 290 feet high, and here you will find also a General Grant and a General Sherman tree, both of which are somewhat smaller and less ancient than those that grace the Federal reservations in the southern chain of the Sierras.

The California Redwood Park offers the best view of the redwood in its native habitat, as here there are open spaces where one may glimpse the great trees and compare them with the growth of normal size.

The Welch grove has some unique groups of trees, the Cathedral, 300 feet in height and 210 feet to the first limb, resembling an Ionic temple in its noble aspect. The Beauty Tree is one of the most perfect specimens of the sempervirens; it is 300 feet in height and 210 feet to the first limb. The Giant Tree is the largest of the group, with a circumference of 61 feet. It is said to contain 80,000 feet of lumber.

Good Fishing

In the Big Basin there are scores of creeks that provide good fishing, two hundred miles of streams for the fisherman; and the wooded slopes of the canyons through which the road winds, through the San Gregorio and on through La Honda, make the panorama a never-ending medium of delight.



The ribbon-like concrete highway that leads to Santa Cruz.

Spring in California

There's a strident call in the Open Road
Where the Spring's glad message lies,
And the motor sings me a joyous song
With a lilt of the azure skies.

O'er the ribboned line of the Great Highway,
Where the wildflower carpet's laid,
Where the poppy opens her golden cup
As a symbol of Spring arrayed.

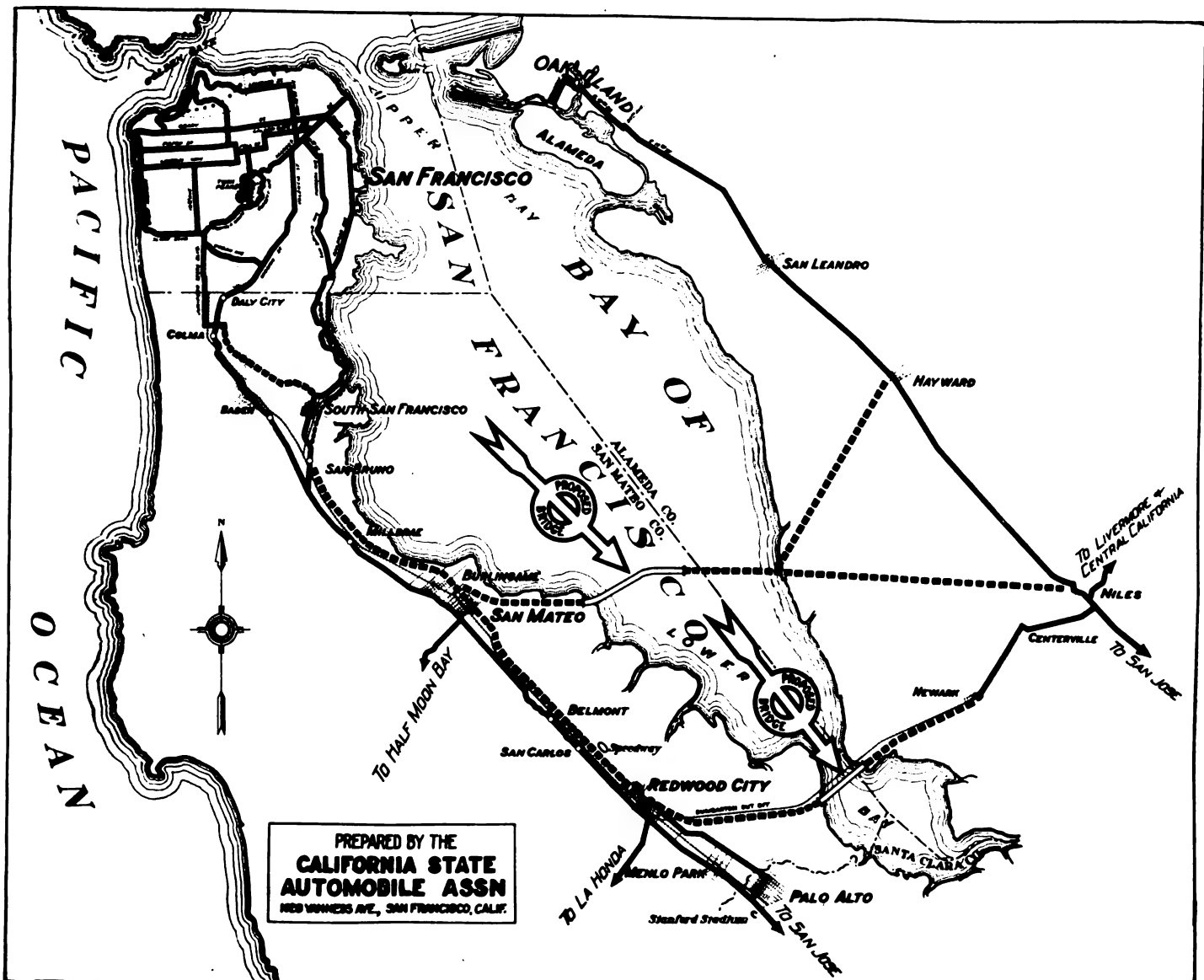
Through the forests, born in an ancient day,
With their banks of moss and bloom,
And the bordered aisles of the canyons dim
Where the giant Redwoods loom.

Then o'er hill and dale to the realm of snow,
To the mirrored lakes and rills,
While the skylark's call from the meadows green
Can be heard on a thousand hills.

For the feverish press in this Game of Life
What a balm does Nature bear!
What a draught of health in the new-turned earth,
What a change from the realm of Care!

O, the key to much that the world loves best
Can be found beside the way,
If your motor sings you a joyous song
At the dawn of a bright spring day.

—Vonard Fraser.



THE BAY DISTRICT TRAFFIC PROBLEM

Concentration on Second Peninsula Highway the Solution

By C. C. COTTRELL, M. Am. Soc. C. E.

Manager Good Roads Bureau, California State Automobile Association

SUCH expressions as "uncork the bottle neck," "break the neck of the bottle" and "burst San Francisco's Chinese Wall" have been so frequent of late in San Francisco and vicinity that the public should know what all of this is about and what plans have been made to do these things of which we hear so much.

Those thinking of San Francisco as having a "Chinese Wall" around it picture in their mind the end of the "Peninsula," bounded on three sides by water, across which, they believe, there is no satisfactory transportation facility, and on the fourth side by a highly developed community through which avenues of transportation are extremely limited. In general, the ones using this expression have in mind the need of a bridge connecting the

San Francisco peninsula with the mainland, or Oakland, side of San Francisco Bay and have applied the need to transcontinental rail traffic, commuters and motor vehicles. The bursting of the "Chinese Wall," then, means a bridge somehow and somewhere.

"The bottle neck" is a fit expression for anyone thinking of the vast territory tributary to San Francisco from which originates an enormous motor traffic forced to concentrate on one peninsular highway, all too narrow, in order to reach their metropolis. So large is the bottle and so small the neck that such a happening as a truck colliding with an automobile has been known to form an effective stopper, completely blocking traffic for two hours. The people advocating this

form of improvement have in mind but the one type of traffic—motor vehicles. The remedy is obviously more highways.

No one doubts that there is a physical need to Northern California in general and to San Francisco in particular of both improvements, the one of "bridging the bay" and the other of an additional highway down the peninsula. The two propositions ought to be considered separately, for the objects sought to be obtained are different. In the past they have been considered in such a manner. Within the last few weeks, however, in all meetings and discussions, the two have been closely linked as one proposition, especially as respects one plan to bridge the bay.

To the writer the regrettable feature

of this is twofold, in that, first, the importance of the additional highway, in those meetings at least, is relegated to second place; and secondly, because there is an agreement of opinion as to the highway improvement and there is not that as to the bridging of the bay.

It must be remembered that the plan to provide an additional highway down the peninsula has for its object the relief of an acute congested condition and as such it is an imperative necessity.

On the other hand, the plan to bridge the bay, whether at San Francisco or Dumbarton, is more for an ultimate object of providing the outlying regions of Northern California with a more direct and satisfactory means of communication with San Francisco.

The idea of bridging the bay is not new by any means. As far back as 1874 and '75 there was considerable agitation about it, and the newspapers of that time were full of articles and reports of engineers. The plans proposed then were not at all unlike the plans advocated now; even the idea of a submerged tube was favorably considered. At several periods since that time of fifty years ago the matter has engrossed the minds of the public, but no physical headway has been made.

Now several ideas and plans are being given publicity. These may be divided into two classes—those of the upper bay connecting San Francisco and Oakland directly, and those of the lower bay connecting the San Francisco peninsula with the interior counties.

Upper Bay Plans

The upper bay plans provide for elaborate structures connecting the east bay communities of Oakland and Alameda directly with San Francisco. Last year there was transported between these points on ferries a total of 41,238,583 people and 746,627 vehicles, being such an enormous traffic that the utmost thought and consideration should be given the transportation facilities. It is proposed in these plans to bring the transcontinental railroads directly into San Francisco, to provide more adequate transportation for commuters, and to care for vehicular traffic of each side of the bay desiring to enter the other side.

Two eminent bridge engineers, Messrs. Davies and Modjeski, were brought to San Francisco, and they proposed a plan and estimate which might be used as a basis for working out a method of financing the project. The proposition of bridging the bay near San Francisco, while of considerable magnitude as an engineering work, is in reality a financial problem, and it

devolves more on the men of finance than the engineer to solve the problems.

Estimates of the cost of building this bridge range as high as \$80,000,000, dependent upon location and type of structure, with an opinion that between forty and fifty million dollars would build one adequate for all present needs and for a long time in the future, without affording facilities for the transcontinental railroads.

Before a bridge can be built directly from San Francisco to Oakland or Alameda, factions and communities now apparently opposing the proposition will have to unite in one concerted move, detailed engineering investigations will have to be made, and a plan of financing worked out and accomplished. These studies and investigations will take a long time and with the construction itself will probably require from five to eight years.

That such a structure will eventually be built is conceded. Just when is problematical. In the meantime the consideration of other projects should not be delayed.

Two Structures Proposed

The lower bay bridge projects include two structures, one directly east of San Mateo to Niles and the other near the present railroad bridge at Dumbarton. Both of these are shown on the accompanying map.

The advocates of the lower bay projects are seeking to provide an easy means to Central California of entering San Francisco.

Because of the topography of the country in the east bay region, practically all of this traffic would flow through Niles and the Niles Canyon; consequently the relative distances are worthy of consideration.

The following table will show the comparative distances from Van Ness Avenue and Market Street in San Francisco to Niles by present methods of travel and by those proposed:

Via present S. P. auto Ferry and Hayward.....	31.7 miles
Via proposed Coyote Point (San Mateo) bridge.....	38.3 miles
Via proposed Dumbarton Bridge.....	45.0 miles
Via Alviso (all highway).....	65.0 miles

The proposed bridges do not save actual miles of travel, but they do eliminate a long ferry crossing and several miles through a congested district and, with the connecting highways, form an avenue for traffic with a minimum of interruptions.

The time element is a big factor in everything nowadays, and either of the proposed lower bay structures will save from fifteen minutes to one hour in time from San Joaquin Valley points to the heart of San Francisco.

Either of the two structures is feasible from an engineering point of view,

and compared with bridging the bay near San Francisco proper the cost is nominal.

When the San Mateo or Coyote Point structure was first conceived, it was planned to build a bridge about 100 feet in width, to care for four railroad tracks and a 40-foot highway, at an estimated cost of about \$20,000,000. The idea, of course, was to care for all vehicular traffic, transcontinental railroads and considerable of the commuter traffic.

Cost \$3,000,000

Recently, however, the plans have been changed, so that now the advocates of this project have in mind the caring for vehicular traffic only, requiring a structure which with approaches it is estimated would cost about \$3,000,000. Their estimate includes $3\frac{1}{4}$ miles of bridge work, of which one mile would be long-span construction and the remainder reinforced concrete trestle, 3 miles of mole construction and $2\frac{1}{8}$ miles of fill on the San Mateo side. The roadway would be 21 feet in width to meet this estimate, although they believe a much greater width is justifiable.

The proponents of the Dumbarton bridge claim a comparable structure can be built for \$1,500,000 and that the slightly longer distance of 6.7 miles over the San Mateo structure is more than justified by the saving in cost. The total length of the Dumbarton bridge would be about $1\frac{1}{4}$ miles, and, except for one long span to make a draw opening, it would consist entirely of reinforced concrete trestle.

The above estimates and claims are made by the proponents of their respective sites. It is obvious that before any kind of a comparable estimate can be made or the relative merits of the two projects brought out, both from an engineering and a financial standpoint, more investigation should be made at both sites, requiring some little time. The California State Automobile Association will shortly publish a detailed article setting forth the relative merits of the two structures.

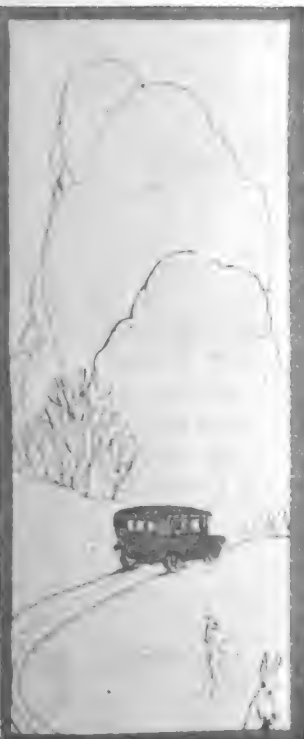
The lower bay projects, either the one at San Mateo or that at Dumbarton, have several advantages over those of the upper bay aside from cost: (1) a workable and practical plan of financing is provided by a State law—the joint Highway District Act; (2) they are freer of Government restrictions—in fact, at the Dumbarton site a precedent has been established in the construction of a railroad bridge; (3) they can be built much sooner; and (4) thousands of acres of industrial lands will be made available.

Neither of these projects should detract from the big idea of bridging the

(Continued on page 44)

In the World of Motordom

A new auto bus, the invention of Glenn Curtiss, is shown at the right. This vehicle is 37 feet long and turns in a radius of 30 feet. The vehicle immediately below is a Mexican street car built on the chassis of a well known American make automobile. At the bottom is shown the auto sled of Leon Trotsky, Russian leader. Photos by International.



Your automobile and your summer vacation—

What part is your car going to play in your vacation this year? When you got it did you not expect a great deal of pleasure out of it? Or perhaps you bought it for pleasure. Maybe you thought you would get it for business and use it for the family and let them get some enjoyment out of what was part of your business equipment.

In any case you may derive a greater joy out of the use of your car this year than you can out of anything else. You can give your family the greatest outing they ever had. All you have to do is to decide that you will do this.

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Write to the Pacific Northwest Tourist Association, maintained by Government funds to give free information, Herbert Cuthbert, Executive Secretary, L. C. Smith Building, Seattle, Washington.



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AFTER GASOLINE, WHAT?

A Glimpse Into the Future of the Motor Car

By HAROLD F. BLANCHARD

MOTOR cars will soon be as popular as kitchen stoves and bathtubs. There are already as many of them as there are telephones in the land. The time is coming when every man will recognize his right to own a motor vehicle to provide him with personal transportation, and will regard the automobile as a matter-of-fact essential, the same as his shoes.

Neither bathtubs nor automobiles are essential; nor have they much in common. But it is interesting to compare them for a moment. The bathtub is a mark of progress; it is a milestone in our civilization. It is what might well be called a necessary luxury. Once you have one you can't well get along without one. The same is true of the motor car. It fills an important niche in the transportation requirements of nearly every man, be he rich or poor. It carries him about his business and it provides him with open air and recreation during his hours of leisure. The point is, that the bathtub has long been accepted as a necessary unit of household equipment.

Complete Cars at \$350

The time is not far off when motor cars will not cost much more than bathtubs. It has been possible to buy a good small Ford car for some time for less than \$350 and just recently another large manufacturer has announced a five-passenger touring car to sell complete with electrical equipment and demountable rims for \$348. It is conceivable that in a few years somewhat smaller cars than either of these will be produced to sell for about \$200. This figure is certainly within the range of almost everybody. And if a new car lists at \$200 a good second-hand one should be available at \$100. Such an automobile will run 60 miles on a gallon of fuel and at least 10,000 miles on a set of tires costing less than \$10 apiece, making the total cost for fuel, oil and tires less than 1 cent per mile. There are few families who would not purchase an automobile according to these figures.

But is there fuel enough? What is the outlook? The fuel supply is not the burning question that it is usually cracked up to be. There is no need for alarm. There will always be sufficient fuel, and the fuel is likely to be largely gasoline for the next century or two. But other fuels are sure to grow in popularity as the price of gasoline rises, and it is certain that the price will go up as domestic supplies are reduced and a

larger proportion of the fuel must be imported from distant parts of the globe.

It is estimated that there are 9,000,000,000 barrels of oil in the ground in the United States obtainable by present methods. This supply is sufficient to meet the country's needs for 20 years. But it should be remembered that after all, while the United States is a large country, its area is only a small percentage of the land surface of the globe and it is only fair to assume that the remainder of the earth will supply oil in the same generous proportion. The total, therefore, is certainly sufficient to supply the needs of the globe for the next century and perhaps two centuries. Imported oil will cost more, but as long as it can be sold at 50 to 75 cents a gallon the motorist will not complain, because as the price of fuel goes up, the automobile engine will be made correspondingly more economical, so that the fuel cost per mile is likely to remain about where it is now, regardless of fuel price. It is admitted that present day automobiles could be made twice as economical of fuel as they are now by various modifications, including reducing the average engine size and car weight somewhat, and increasing the gear ratio, changing the engine design to give less flexibility and power but more economy, etc.

Developing Other Fuels

But as the price of gasoline mounts, other fuels will be developed. This is already being done where the cost of gasoline is high. In England, for example, where gasoline has reached a maximum of more than a dollar a gallon, benzol is used to some extent. This liquid is obtained by coking soft coal, and therefore is a by-product of illuminating gas companies, blast furnaces and so forth.

It may be purchased in the United States for about 30 cents a gallon by the barrel. It vaporizes much more readily than gasoline, will run on the same carburetor adjustment and looks like water. It freezes in cold weather and therefore is not suitable for use in the Northern States in the winter months. But this drawback is readily eliminated by mixing it with denatured alcohol and various other fuels.

Benzol is also used throughout Europe, and Germany had to depend very largely on it as a motor vehicle fuel during the war. At the present time Germany cannot afford to buy gasoline because of the great depreciation of her currency, and she possesses no

oil wells. Consequently the standard motor fuel in Germany now consists of two parts benzol, one part alcohol and one part tetralene. The latter, like benzol, is a coal tar product.

Speaking of benzol, it is worth while digressing for a moment, to explain that any motorist who is bothered with an engine which knocks due to too high compression may cure the trouble by adding one part benzol to four parts gasoline. As long as this fuel combination is used the knocking will disappear, unless the compression is much too high, in which case more benzol will be required. Conversely, if you suspect that your engine has a compression knock, changing to the benzol mixture will eliminate the knock. Inasmuch as benzol will also cure a carbon knock, all carbon should be removed before testing for the compression knock. In an engine which fouls rapidly with carbon, the removal of this accumulation need not be done as frequently as when pure gasoline is used.

Alcohol Considered

Alcohol may be obtained from almost any kind of vegetable matter, including sawdust, stumps, cacti, corn, acorns, straw, beets, cornstalks, and so forth. Alcohol is too expensive and the supply too small for it to be considered as a supply available at the present moment. But production will certainly increase and the price will drop as the demand for it grows. According to the Department of Agriculture the ordinary automobile engine can be operated on alcohol without material change and that its operation is more nearly noiseless than when run on any other fuel; alcohol is especially suited for air cooled engines; the average engine will give 20 per cent more power if it is specially adapted to run on this fuel and it will give 10 per cent more power without any change, although at the expense of a greater fuel consumption.

With every farmer's straw stack a potential supply of alcohol it is conceivable that eventually each farmer will possess a small apparatus for converting his straw into denatured alcohol during the winter months when he is not very busy with farm routine. Recently designed equipment for this purpose consists of an oven four feet wide, ten feet long and six feet high and a steel reservoir seven feet high

(Continued on page 38)

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No muss—no work—simply slap the CRITZ lubricator over the bearing—a *single* turn of the handle—yank off the lubricator—and the job is done. The CRITZ patented swivel head makes all bearings easily accessible. The CRITZ patented ball check cuts off the flow of grease without unwinding the handle—and the CRITZ 2000 lb. Super-Pressure insures *thorough* lubrication. CRITZ fittings quickly and easily installed on any car, or CRITZ adaptors quickly adjusted to use with Alemite fittings where they are already installed.

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WHY ENGINES OVERHEAT

Some Valuable Information for the Warm Weather Days

WITH the warm summer months just ahead, the question of overheating demands attention. While the trouble is not as general as it used to be, the plain fact remains that any car is likely to develop a radiator full of boiling water, and when that happens it is essential that the driver know what to do.

As insurance against boiling water a radiator thermometer is the best sort of an investment, for it indicates at all times what the temperature of the water actually is. The driver becomes familiar with the temperature registered by the car normally, and therefore as soon as the thermometer begins to indicate more than a normal temperature he is alert for the reason.

Lacking a thermometer the driver should keep a sharp "watch" with his nose. Usually an engine begins to smell hot before any other indication of boiling radiator water is given. To be sure, whenever the radiator boils, a column of steam issues out of the radiator vent pipe, but this is beyond the ken of the driver unless he forsakes the wheel and walks around the car. The average radiator cap is sufficiently tight so that no steam will escape to give the driver visual warning.

When a hot radiator is discovered, the problem is to determine the cause. If the day is extra hot or considerable hard climbing has been done on low gear, it may well be that nothing is wrong with the cooling system. The boiling may be caused by neglect to fill the radiator. After more than a certain quantity of water has evaporated, the remainder begins to boil. Or, in other words, as the quantity of water in the radiator decreases, its average temperature rises until the boiling point is reached.

Ruin Without Water

With most automobile engines built today there is no particular harm in running with boiling water; in fact, an engineer well known to the industry is now developing a cooling system which always runs on boiling water. Unfortunately, in the ordinary automobile radiator, boiling water evaporates very rapidly. If it did not evaporate there would be little harm in its boiling. And the rate of evaporation is so high that the supply of water quickly vanishes. The danger arrives when there is no longer any water in the cylinder jackets. If the engine is allowed to continue to run, the lubricant on its wearing surfaces will soon turn to vapor and these perfectly dry surfaces will be badly

scored, bearings will melt out and cylinders and pistons will seize. One of the surest ways to ruin an engine is to run it without water. It is considerably worse than operating it without oil, because an engine without water not only is without benefit of lubricant but is hot as well.

Overheating is frequently caused by a small leak in the hose, the temperature mounting as the water supply decreases, until boiling point is reached.

Overheating may be due to a loose fan belt, or perhaps the fan belt has broken or fallen off. It is a good plan to carry a spare fan belt unless it happens that the cooling system is unusually generous in its proportions. If the fan belt slips on the pulley when only a small pull is applied to a fan blade, it is good evidence that the belt needs tightening. The fan belt should be tight enough to drive the pulley at low and medium speeds without slipping. Whether the belt slips or not at high speed does not matter, because the car is then likely to be running so fast that the fan has little or no effect on the amount of air passing through the radiator; and on many cars when running at high speed the fan interferes rather than helps the flow of air.

A Simple Method

The next place to look for the trouble is in the spark advance. Nothing will produce overheating more quickly than a retarded spark, and occasionally a spark that was much too far advanced has been known to produce boiling water. The fact that the spark lever is in fully advanced position is not absolute proof that the spark is advanced, because slippage sometimes occurs at some point or other in the linkage. The best way to check up is to make sure that the breaker points separate just on dead center. Usually it is some trouble to determine dead center and place the engine on it, but here is a simple, rough method which works well enough. It is a well-known fact that the exhaust valve closes and the intake valve opens approximately on dead center. Therefore, observe the valves on any cylinder while the engine is cranked slowly by hand, and stop cranking the instant the intake valve begins to open after the exhaust valve closes. If the spark is correctly timed, the breaker points should now be ready to separate with the mechanism in the retarded position. If not, the mechanism should be reset to give this condition. With the spark thus set no further overheating difficulties will be caused by ignition timing.

Overheating is sometimes blamed on a carburetor setting which is too rich, and too lean a setting has also been ascribed as an overheating cause, but cases of this sort are extremely rare.

If the interior of the engine is heavily coated with carbon, the water may boil, although it is likely that before this happens the engine will run so badly and the valves will leak so freely that the owner will have the valves ground and the carbon removed.

Sediment Interferes

Sediment in the radiator or the water jackets will interfere with cooling. Troubles of this sort are not usual unless the water is hard. In sections of the country where water contains a large amount of soluble salts it is advisable to use rain water for filling the radiator. It is a good plan to drain the radiator occasionally to remove dirt which collects from various sources, and it is doubly advisable if there are salts in solution.

Sediment in the radiator and in the water jackets may usually be removed by putting two or three pounds of washing soda in the radiator and running the car for a day or so before draining the system and filling with fresh water.

If the overheating is caused by some interference with the circulation, it is easy to determine this fact by feeling the surface of the radiator. If the top of the radiator is very hot while the bottom is comparatively cool, it is plain that the water is not circulating. Steam from the water jackets is warming the top half of the radiator, while the water in the bottom of the radiator is practically dead.

If the cooling system is provided with a pump, it is quite possible that the lack of circulation is due to some pump derangement. The coupling driving the pump may have slipped or have broken. The first step is to examine the pump-driving mechanism to make sure that it is working properly. If it is, the next assumption is that the vane in the pump is broken or otherwise out of commission; but as it is some trouble to remove the pump and take it apart, it is wise to make sure that the interference with the circulation is not elsewhere.

On cars equipped with thermostats which act on the water circulation, short-circuiting the water to the radiator while the engine is warming up, so that it circulates around and around through the water jackets, it may happen that the thermostat will stick. In such case the whole radiator is likely

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Built in Velie's own motor plant, it is the exclusive equipment of the Velie's new model 58 car.

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to be cold while the pipes running from the water jackets to the thermostat are quite hot.

Before taking the pump apart be sure that the stoppage in the circulation is not due to sediment, water freezing in the bottom of the radiator or slush forming in the lower hose connection, or to a hose connection in which the inside skin has rotted away from the fabric, peeled loose, and swung across the passage, clogging it.

Take Pump Apart

After every other part of the system has been checked for lack of circulation it is then advisable to take the pump apart; and invariably, if the previous inspection has been carefully done, the trouble will be found here.

It is not a good plan to put cold water into a sizzling-hot engine. If the water boils away completely, the engine should be allowed to become quite cool before cold water is added. If this precaution is not taken there is a good possibility that the cylinders will crack, and even if this does not happen they may be deformed.

There are some cars which will cool to perfection under ordinary circumstances, yet when they are faced with the extremely long mountainous grades to be found in some parts of the country they will quickly overheat. Sometimes this tendency is caused or at least aggravated by carbon deposit, spark improperly set, and so forth. However, a car which is prone to overheat can be made to negotiate mountain grades without much trouble if it is carefully handled. Spark and mixture should both be correct, and the radiator should be full of water. Brakes should not drag nor should the clutch slip, and tight valves and pistons and freedom from carbon will also aid. But, after all, most depends on the way the car is driven. In ascending grades, the aim should be to keep the total number of engine revolutions to a minimum, because each engine revolution produces that much more heat for the radiator to absorb. While the engine should never be permitted to labor, the car should be operated on high whenever possible, shifting to second only when necessary and going back to high as soon as possible. Like-

wise, low should be employed as little as possible. In ascending, it is quite worth while to shift from second to high for a run of one hundred feet. Every little saving helps keep the temperature of the radiator down. Down grades are likely to be sandwiched in between the up grades, and a noticeable direct-air-cooling effect may be obtained by allowing the car to descend using the engine as a brake with the switch off and the throttle wide open. A maximum amount of cold air is thus drawn through the cylinders. Whether to use high, second or low in descending depends on the steepness of the hill.

A folding bucket is a priceless article in touring a hilly country in a car which is likely to overheat. When the water begins to boil away and there is still a mile or so of hill ahead, there is only one rational thing to do and that is supply more water. There are plenty of cases on record where the motorist has been forced to bring water to his car in a folding drinking cup or in a badly leaking hat. A bucket or vessel of some sort should be procured without delay as soon as the first indication of overheating occurs.

CARS NEEDED FOR SHRINE VISITORS

Six Thousand Automobiles Required to Handle Vast Throng at Convention

AN APPEAL to all motorists of San Francisco and Northern California to register their cars with the Shriners' Transportation Committee, in order properly to extend motoring facilities without charge to the tens of thousands of visitors who will be in San Francisco during the Shrine Convention in June, has been issued from the offices of William L. Hughson, chairman of the committee in charge of this important work.

Over six thousand automobiles will be needed for the work of handling the vast crowd of visitors and extending to them, free of charge, motoring privileges throughout the city and vicinity during their short stay here.

It is the purpose of the committee, which is composed largely of automobile men, to list the names of all motorists who are willing to devote their cars, driving themselves or furnishing a driver, during any specified day or days. These persons will then be called upon as the need for their cars arises.

"It is most important that the

San Francisco motorists realize the necessity of this work that has de-

FILL THIS OUT RIGHT NOW

**WILLIAM L. HUGHSON, CHAIRMAN,
AUTOMOBILE COMMITTEE, SAN
FRANCISCO 1922 SHRINE COM-
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I realize the importance of furnishing the necessary number of automobiles for the Shrine Convention and offer my co-operation by placing my automobile at your disposal on the following days:

(Check the days it will be possible for you to serve.)

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Name

Address

Phone No..... Make of car.....

No. of Passengers..... Who will drive.....

"SAN FRANCISCO NEEDS YOUR CAR."

"DO IT NOW."

If you haven't an automobile, sign up a friend who has and send it in.

DO YOUR BIT.

volved on all of us," said Hughson "It is another chance for San Francisco to prove that she 'knows how' in a splendid way, and I am sure that the spirit of hospitality for which San Francisco has always been famous will actuate the automobile owners of the city and Northern California to offer their cars at once."

One of the main features of the entertainment of the visitors will be a special twenty-five-mile trip through the city and its environs which has been routed by the California State Automobile Association and which will be signed by the club. Thousands of additional machines will be needed for this trip, and it is hoped that those who can furnish cars for this hour-and-a-half ride will also list them with Hughson.

In order to aid the committee in their work of getting cars, **MOTOR LAND** is printing herewith a coupon which should at once be filled out by those who are in a position to assist in the work of entertaining the city's visitors, and mailed without delay to Chairman William L. Hughson.



WIRE WHEELS

By selecting WIRE WHEELS for this superb model—the Buick Special 54 Roadster—the designers assured: Attractive appearance; easy riding qualities; quick tire change convenience; greater strength and additional safety, due to the TRIPLE spoke construction.

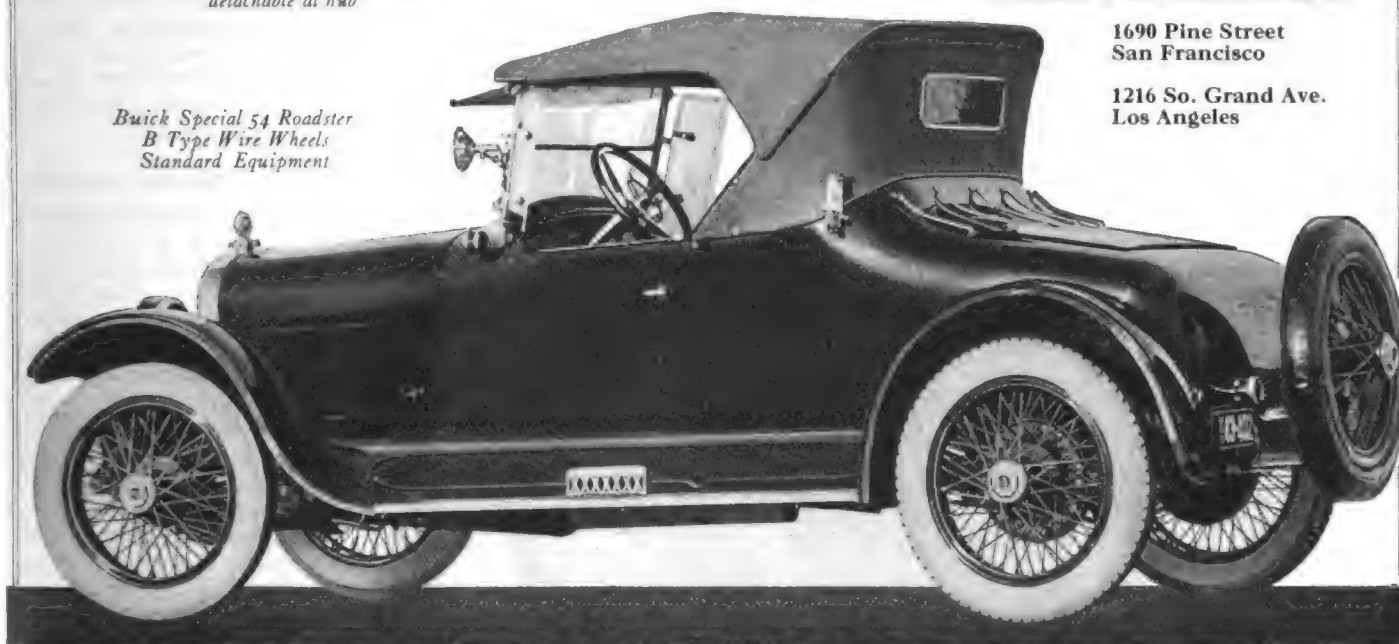
Five wheels, triple spoke detachable at hub

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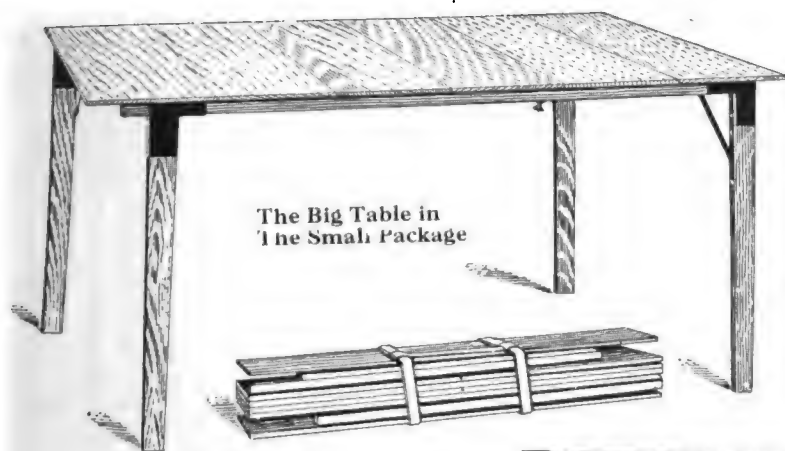
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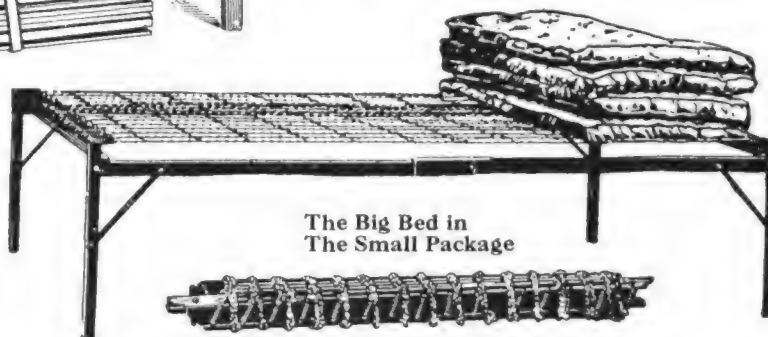
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The Small Package

Campic Tables

For picnic or camp. A light, rigid, durable, well finished table. Quickly set up or taken down, meeting the long felt need of picnickers and campers for a *Larger* practical table. Size of top 3 feet by 4 feet 6 inches. Size folded 5 x 9 x 36 inches long.

Order from your dealers. If they can't supply, order direct.

Bed The 1922 model is distinguished by the combined chain and link fabric and the improved leg action, which locks leg in rigid position by simply unfolding it. Rolls up into a package only 5 inches in diameter by 4 feet 4 inches long. The most compact bed made, yet when mounted is a double bed 4 feet 2 inches wide, 6 feet 4 inches long, and stands 19 inches off the ground. A handy extra bed at home. Made of standard bed steel, strong and durable. Mattress folds, blankets placed on it, the bundle strapped together, placed on the seat and cushion taken out so that no car space is used.



The Big Bed in
The Small Package

Manufactured and Patented by **H. R. BASFORD COMPANY** Furniture Exchange Building
180 New Montgomery Street . . . San Francisco

BRINGING BACK THE DAYS OF '49

Sacramento Valley to Revive Historic "Days of Gold"

By FRANK B. DURKEE

HAVE you ever motored through the Sacramento Valley in May—that glorious poppy-time season along the highways of the north?

Sacramento is inviting you to come this year, and to come in May, not only because it is then that the valley is most beautiful, but also because the Capital City is arranging one of the most novel attractions ever planned in California—the thrilling "Days of '49" celebration.

For one week, May 23 to 28, the people of Sacramento are going to turn back the hands of time and enact once more those wonderful "Days of Gold" that made the name of California known around the world. Preparations for the celebration are being carried forward on a scale that should attract the admiration and cooperation of all California. The businessmen of Sacramento have underwritten a \$100,000 fund to finance the "Days of Gold" celebration.

Preliminary preparations have been going on for months. Scores of the womenfolk and the school children of the city have been preparing costumes, and the visitors to the city this month will see the people of Sacramento dressed as they were in the days of 1849, when the thousands who came to search for the elusive gold laid the foundations of the State's present greatness.

Fifty engineers have worked on the plans for the "Mining Town," which will be as near a reproduction of a town of the early days as it is possible to conceive. Scores of log buildings have been in process of erection for some time. The old-time Casino and dance hall with its "bar," its games of chance, its dancing girls and old-time fiddlers, will be there.

Historic Buildings Reproduced

The historic buildings of such mining centers as "Hangtown" (now Placerville), "Slug Gulch," "Dutch Flat," "You Bet," and many others are being reproduced by the people of those communities. From the mountains of Amador, El Dorado, Placer, Nevada, and other mining counties of the north

are coming the "old-timers" with their priceless relics of those stirring times when history was made, to exhibit them to thousands who are coming to

ceed to the fort to reign supreme for a week.

Oxen are being broken to the yoke, stage coaches of the early days gathered from all parts of Northern California; cowboys and dashing horsemen will be there to center their activities about the fort as did their prototypes more than seventy years ago.

Stage Replaces Auto Bus

Historic K Street will be decorated as it never has been since those early days. The hotels are planning to use stage coaches instead of the regular auto busses, and as far as possible everything will go back to the days of 1849.

The men of Sacramento are engaged in a beard-growing contest, which started on St. Patrick's Day. Bearded miners in their red shirts and boots will complete the picture.

For the State Fair Grounds a rodeo and Wild West show, such as California has never seen before, has already been arranged. All the great riders of the West are coming, and thousands of dollars in prizes will be given away.

Stage-coach races, chariot races, a sham battle between real Sioux Indians from Nevada reservations, a whole tribe from Klamath Reservation in Oregon, and soldiers dressed and equipped as were the troopers of the early days, will be among the features at the Fair Grounds every day during the week.

Adjutant General J. J. Borree is reorganizing the famous Sutter Rifles, the crack military organization which gathered together by Captain Sutter made its headquarters at the fort in 1849. He is being assisted by veterans of the war.

A Governor's ball, at which the inauguration of Governor Burnett, the first Governor of California, will be reenacted, will be one of the special features of the week and will be the occasion for the appearance of the leading matrons of Sacramento in a wonderful and charming display of '49 styles, with beautiful flowing gowns, designed after a careful study of the



Transportation in '49.

Sacramento from all parts of the country.

At the mining town will be reproduced every development of the great mining industry from pan and "rock-er" to the modern shaft and stamp mill. To those who love the name of California it will be an education. The relics which will be exhibited at the mining town will constitute the greatest collection of the kind ever got together in California, and their owners will be on hand in the various county buildings to tell about them and the hidden lore of the communities whence they came.

Once more grand old Sutter Fort will blaze forth in its old-time glory when it was the center of all California's activity and the western outpost of Western development. The Native Sons of California will be in charge, and the landing of Captain Sutter will be enacted in pageantry. He will come up the Sacramento River with his faithful band; will land and disperse the Indians, and pro-

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records of the time contained in the collections at the State Library.

Many Features Planned

The celebration will have other features, and the enthusiasm with which the people of Sacramento and the northern counties are entering into the spirit of the pageant is evidence of their patriotism and their admiration of the strong, virile men who founded the city and who started California forward to her great destiny. Literally the whole city is taking part in the celebration and inviting the people, not only of California, but of the

nation, to be present and participate.

Thousands of Californians are expected to motor through the great valley and visit Sacramento during the week. Her people are determined, while it is yet possible, to get together the relics of the early days, that the deeds of the past shall be commemorated in a celebration worthy of the spirit of the Forty-niners.

All roads in California will lead to Sacramento. Special arrangements are being made for those who wish to camp out; the municipal camp ground at McKinley Park and other camps will be arranged and complete plans for

handling the thousands who are coming are already well worked out.

Planned just before the warmer weather comes, while flower-bordered highways beckon the motorist, a trip to Sacramento this month and a visit at the "Days of '49" will be one of the most delightful outings of the summer; in fact, it may be made the beginning of the vacation.

What could be more inspiring for the beginning of one's summer trip than to revel for a day or two in Sacramento and become imbued with the vigorous, carefree and adventurous spirit of the Forty-niners?

AFTER GASOLINE, WHAT?

(Continued from page 30)

and six feet in diameter. Its cost is not high nor is it difficult to operate.

According to Roger Babson, economist and statistician, "several automobile manufacturers are experimenting with bituminous coal dust as a fuel for automobiles instead of gasoline, and the results already indicate that within a few years coal will be used as a motive power for automobiles."

It will be ground to a powder finer than talcum and will be blown in through a special carburetor. "Fifty cents worth of gasoline will carry a car the same distance that \$5 now carries it."

Powdered Coal a Substitute

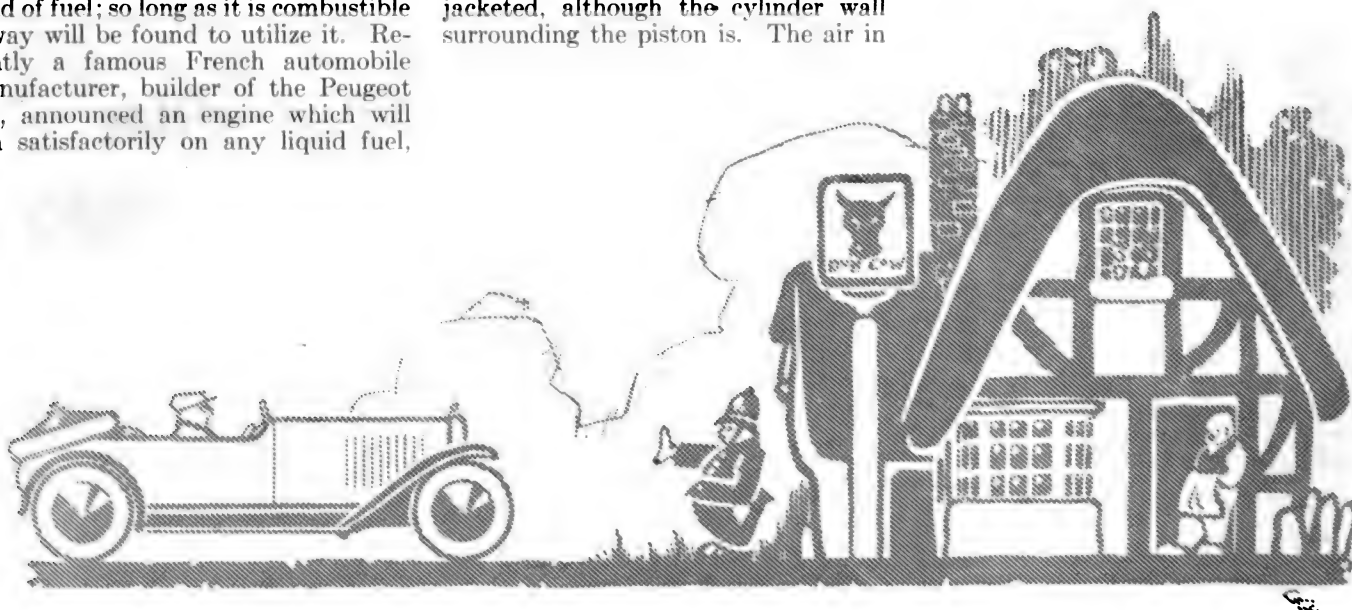
On the face of it, it is not an extremely difficult problem to substitute powdered coal for gasoline and burn it in an automobile engine. Unquestionably it will be a problem as easily and satisfactorily solved as the problem of the modern carburetor.

It may now be stated without much fear of contradiction that an automobile engine may be made to run on any kind of fuel; so long as it is combustible a way will be found to utilize it. Recently a famous French automobile manufacturer, builder of the Peugeot car, announced an engine which will run satisfactorily on any liquid fuel,

without change of adjustment. If you run out of gasoline in a frontier country miles and miles away from the nearest fuel station, it makes no difference, provided you can find some combustible liquid. Draining some surplus oil from the crank case might give you the needed supply, or you might barter or buy some oil from a native. Whether it is China wood oil, cottonseed oil, sperm oil, or any of the several thousand available, is a matter of no importance to this new engine which runs on any and all of them with equal facility. It is a two-cycle engine operating on a compression three or four times as high as used in the ordinary engine. The oil, instead of being vaporized in the carburetor, is injected directly into the combustion chamber by a small pump, just when the piston reaches top dead center. The oil, no matter how heavy, vaporizes instantly, since the pure air in the combustion chamber is excessively hot because of its high compression and also because the combustion chamber is not water jacketed, although the cylinder wall surrounding the piston is. The air in

the combustion chamber is not only hot enough to flash the oil into vapor but is also hot enough to set it on fire. This engine is twice as economical as ordinary engines because its compression is so high, making its efficiency high. The usual automobile engine only operates on full compression when the throttle is wide open. When the throttle is only partly open the compression may be very small, perhaps 10 or 15 pounds. On the contrary, this new Peugeot engine always operates at maximum compression, and this has a proportional effect on the efficiency and fuel consumption. The engine has no throttle but, instead, the amount of oil injected by the fuel pump is varied according to the load on the engine.

All of which proves that while everyone will soon own an automobile, there need be no alarm over the fuel supply. There are so many large fuel sources that there will always be fuel.



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AUTOMOBILE CLUB NEWS

C. S. A. A. 1922

Touring Service Plans

Going touring, hunting, camping or fishing? Ask the Auto Club where to go and how to get there.

The 1922 service of the California State Automobile Association is an insurance policy for an unmarred vacation in any part of the United States or Europe. The service the Association gives to its thirty thousand members has been greatly increased and improved, according to an announcement by Secretary-Manager D. E. Watkins, who summarizes the plans of the Association as follows:

Free tow service into the Yosemite Valley over the Chowchilla Mountain on the Wawona Road and on the Big Oak Flat Road. Official California State Automobile Association tow cars will assist members having mechanical trouble and tow them to the nearest repair facilities in the event of a complete breakdown. This service will be maintained throughout the touring season. For many years motorists have experienced difficulty in negotiating these grades under adverse weather conditions and through failure to have their cars in proper condition. On the Big Oak Flat Road the California State Auto Association tow car will assist members from Carl Inn to Crane Flat. There are grades approximating 20 per cent on this stretch of road. Similar grades are found on the Chowchilla Mountain between Merced and Wawona, where the second tow car will be stationed.

This new service is in line with the policy of the Auto Club to serve every possible touring want of its members. Signs will be erected on both roads notifying members of the location of the tow car station.

Camp fire permits in all National Forest Reserves and State hunting and fishing licenses will be available at the San Francisco headquarters of the Association and at its eleven branch offices and seven touring bureaus located throughout Northern California.

Detailed strip maps compiled by the Engineering Department of the Association and covering all Pacific Coast highways will be available at the headquarters of the Club and its branches. These maps, together with up-to-the-minute reports on road conditions and the extended sign system of the Club, will insure against delay and assure pleasurable traveling. In addition the Association's State Map, showing in colors paved, improved and unimproved roads, and the 1922 transcontinental road map are available to members. Cards of introduction to affiliated clubs in this country and Europe assure the members continued accurate touring service throughout their vacation tours.

In the interest of greater service to members the Association has classified hotels, garages, electric service stations and restaurants. Official hotels to meet all purses have been provided by the Association and members are assured good service and reasonable charges.

For the motorists who desire to camp, the Association has prepared a list of free camping grounds, showing the exact location of the sites, designating equipment provided and listing charges made, if any.

In addition to these touring services the Association maintains an Insurance Bureau where the members receive exceptional service and immediate adjustments, and a Legal

Department which advises a member as to his legal rights in all matters affecting the operation of his car.

Secretary Watkins of the Association has just returned from a tour of the East and predicts one of the greatest influxes of continental tourists in the history of California during the 1922 touring season. Plans to care for these tourists have been perfected by the Association.

Association Member-

ship Cards Accepted as Bail

Under an arrangement perfected by Secretary-Manager D. E. Watkins of the California State Automobile Association with District Attorney Matthew Brady of San Francisco, the membership cards of the Association will be accepted in lieu of bail in all misdemeanor cases.

This arrangement, which will be heartily welcomed by the Association's thirty thousand members, is now in effect. Under the arrangement with District Attorney Brady the Association deposited a guarantee fund with the Bond and Warrant Clerk's office which will insure the city against any loss through operation of the new arrangement.

"This arrangement," said Secretary Watkins recently, "does not mean that the Association will relax its efforts to stamp out reckless driving and flagrant violations of the law. The Legal Department will continue its efforts in cooperation with the authorities to reduce such violations of the law to a minimum. Arrangements effected with District Attorney Brady will give the Association a check on its own members, and while it will be a great convenience to our membership we will see to it that it is not abused."

Bail is required to insure the appearance of a defendant, and under the new arrangement the Association will stand sponsor for the appearance of its members. The membership cards of the Association are generally accepted as bail throughout Northern California.

Association Backs

Peninsula Highway

The full strength of the California State Automobile Association is to be thrown back of the plan to construct a second highway down the Peninsula from San Francisco.

By resolution of its Board of Directors the Association went on record as favoring the early construction of an additional highway down the Peninsula on the east side of the railway tracks at least as far as Redwood City. The Association simultaneously offered to the Supervisors of San Mateo and San Francisco Counties the services of its Good Roads Bureau in working out the details of the project. Engineer C. C. Cottrell of the Association's Roads Department was instructed to investigate the feasibility of constructing and improving additional roads from San Francisco to connect with the proposed highway. Cottrell, who heads the Good Roads Bureau of the Association, is the former State Highway Engineer of Nevada.

In favoring the additional highway at least as far as Redwood City the Association believes this is the primary step necessary to relieve the present traffic situation which is seriously retarding the growth of the Bay District cities.





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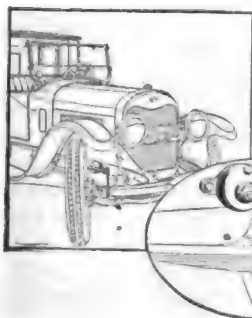
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MOTOR GOSSIP OF THE MONTH

By THE OBSERVER

The Jewett Six

THE most interesting thing about the new Jewett six is that it possesses a 50-horsepower engine, which, considering that it is a light six, should give it all the speed and pickup that any motorist might demand.

This new car sells for \$1,065 as a phaeton or touring car, has a wheelbase of 112 inches and 31 x 4-inch cord tires, and is a running mate to the Paige-Detroit, being made in the same factory.

The Jewett has an L-head engine with a bore of $3\frac{1}{4}$ inches and a stroke of 5 inches, dry-plate clutch and three-speed transmission in unit with the engine. The service brake acts on rear wheel drums while the hand brake acts on a drum to the rear of the transmission. Engine auxiliaries include Remy starting and lighting system and Atwater Kent ignition.

Rolls-Royce Reductions

The American Rolls-Royce phaeton or touring car now sells for \$10,900 complete, whereas the chassis formerly listed at \$11,750, and an open body cost at least \$2,000 additional, so that the new price must be considered as a reduction of about \$3,000.

L. J. Belknap, president of Rolls-Royce of America, announces that the American-built car is not only the equal but actually the superior of the English-built Rolls. In proof of this contention he says: "It is a fact that with the American mechanic, equally skilled as he is with the English mechanic, and excelling him as he does in enthusiasm and initiative, due to more favorable labor conditions, we are actually building the Rolls-Royce in America not only better than it has ever been built before but more economically. We have this advantage that, with our already acquired long experience in building Rolls-Royce cars in England, over here we have not suffered from many manufacturing difficulties and problems which would be eliminated only by beginning new as we did here in Springfield, Mass."

Cotati Races

California race followers have some real thrills coming to them in the speedway races scheduled for the Cotati Speedway on May 7th if the reports of the followers of this sport regarding the daredevil tactics of Pietro Bordino are to be credited.

Those who have seen Bordino perform this season on the Los Angeles Speedway declare that he is the most spectacular speedway driver ever seen in this part of the country.

But Bordino is only one of the twelve entries that the Cotati Speedway management has signed for the big May event. Others that have a big following among lovers of the speed sport in this part of the country are Ralph De Palma, Eddie Hearne and Jimmy Murphy. All of these drivers have performed in the north before, although two of them failed to materialize for the last race here. They are both favorites and should help to place Bordino on his mettle for the coming event.

Hearne is the headliner in the Cotati country, having broken the world's record on his first race over the Cotati bowl.

Harry Hartz, who jumped into the limelight by his victory at San Carlos, will also contend for the honors at Cotati, but although he is a heady driver his youth and inexperience will be against him when pitted against the fast field that he will meet on the Cotati track. Elliott, Klein, Sarles, De Paola, Miller, Wonderlich and Thomas are other entries.

New Olds Model

A new Oldsmobile model 47 known as the Super-Sport car is announced. It is built on the smaller eight-cylinder chassis, seats five passengers, has aluminum steps instead of running boards, disk wheels and a great deal of special equipment. It is upholstered in genuine maroon leather and the body is painted a Jersey brown. It is equipped with Tuarc wheels, individual cast aluminum steps with molded rubber treads and individual bicycle type fenders with splash aprons. Triple bar spring steel bumpers are used front and rear, Gabriel snubbers are used in the rear, and other features include a Boyce De Luxe motometer, mounted on a bar type radiator cap, windshield cleaner, cigar lighter, bevel plate glass windshield wings, stop signal, cowl ventilator, spot light mounted on left front fender apron, step lights for both rear doors, rear view mirror, leather top boot, carrier for two extra tires; and the price complete is \$1,825.

Four-Cylinder Star

The Star, announced by Durant Motors, Inc., to sell for \$348, will have a four-cylinder Continental Red Seal engine, three-speed transmission, Timken axles with Timken bearings, Stewart vacuum system, Spicer universals, and disk clutch. The drive and torque will be taken through the half-elliptic rear springs. It will have a one-man top and sloping windshield. Internal and external brakes will operate on

the rear wheels. The gasoline tank will be located at the rear.

The wheelbase is slightly larger than the Ford wheelbase and the car is somewhat more attractive in appearance. The price includes electric lighting but not an electric starter or demountable rims; these are extra the same as on the Ford. While only the five-passenger touring car will be manufactured at first, it is intended to bring out a full line of cars identical in price with the cars in the Ford line.

The fact that the new car has the Durant tubular backbone, or cross member, suggests that this member will also be used as the muffler as it is in the Durant. Furthermore, the statement that the car is to equal the Durant in accessibility leads to the belief that it, like the Durant, will have a separate transmission.

Durant Motors will assemble the new car, which will be marketed by the Star Motor Car Co., which will be independently operated and financed. It will be made temporarily in Long Island and the permanent factory site has not been determined.

Columbia Is Attractive

The new Columbia light six is an attractive car which sells for \$985, and despite its moderate price it is built of standard units throughout. It has a 45-horsepower Continental Red Seal engine, Timken axles, Durston transmission with Timken bearings, Auto-Lite starting and lighting, wood wheels with disk steel wheels optional, 31 x 4 cord tires, Borg & Beck clutch, Stromberg carburetor, Gemmer steering gear, genuine leather upholstery. The wheelbase is 115 inches and the weight is 2,400 pounds.

More Powerful Stutz

A new series Stutz is announced with a much more powerful engine, the power increase being obtained by improving the design and not by altering the engine in principle. Otherwise the car is unaltered except in minor respects and its appearance is almost identical with the present model.

The new car has a maximum speed of 75 miles per hour and it is said that the hill-climbing ability is 90 per cent better, although the horsepower output is only 50 per cent greater. The engine improvements include a special design of hot-spot manifold, lighter pistons, a detachable cylinder head, a heavier crankshaft and a more rigid crankcase. The engine size has not been altered, the bore being $4\frac{3}{8}$ inches and the stroke 6 inches. The three-speed transmission is mounted in unit with the rear axle, as in previous models.

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THE BAY DISTRICT TRAFFIC PROBLEM

(Continued from page 26)

bay at San Francisco proper. The two ideas are so different and the need so great that the writer believes ultimately both will be built.

It must be kept in mind that the lower bay bridge projects are for vehicular traffic only—that between San Francisco and Central California, particularly the Joaquin Valley points. On the other hand, with the upper bay structures that traffic is only an incident, the big objects being to make San Francisco a railroad terminal and to provide a rapid and convenient transportation facility for commuters and motor vehicles between San Francisco and east bay points.

There has been so much discussion and controversy about the various plans to bridge the bay in order to break down the "Chinese Wall" that the plan to build an additional highway down the peninsula is not receiving the enthusiasm or support that it should. In that respect these various bridge plans are harmful.

Peninsula Traffic

There is no right-thinking person but who is agreed as to its necessity. There is no other community in the world of the dignity to be called a city that is dependent on only one little strip of roadway for its outlet. "Bottle neck" is hardly an appropriate term because it does not convey with it the idea of strangulation.

If we think of the condition down the peninsula as being acute, what will it be in the very near future? The ownership of motor vehicles is increasing by leaps and bounds. A glance at the increase in motor vehicle registrations in California during the past few years will give one an idea of what to expect in the next similar period:

Year	Number of Cars
1914.....	123,516
1915.....	163,795
1916.....	232,440
1917.....	306,916
1918.....	364,800
1919.....	477,450
1920.....	574,323
1921.....	680,614

And right now more motor vehicles are being purchased than ever before!

The traffic down the peninsula does not represent even now all that it should, for there is many a motorist who does not go there on a Sunday or holiday for the reason that he does not want to get caught in the "jam" or be nauseated by the exhaust gases, or to endanger the lives of his family in that strip of country between San Bruno and Redwood City coming to be known as "Death Valley."

There is a unanimity of opinion on how to relieve this condition, and, unlike the bridge propositions, the plans are already made and in detail form.

East Side Highway

It is proposed, first, to construct a highway on the east side of the Southern Pacific tracks between San Bruno and Redwood City. This construction will consist of the building of considerable new highway and the utilization of some existing streets and roads. The length of the improvement will be about 14 miles, of which 12 miles will be new roadway.

For an estimated cost of something less than \$1,000,000 it is planned to acquire a 100-foot right of way and to construct a 24-foot pavement of a heavy type with 8-foot dirt shoulders on each side. The survey has been completed and the plans drawn.

With this plan is contemplated the improvement and straightening of the Bay Shore Road north of San Bruno into San Francisco.

While the serious part of the congestion is south of San Bruno, attention should be given to an additional highway north of that point, and one that should be given first thought is that shown on the accompanying map as being between Colma and South San Francisco. This highway would be back of the cemeteries and afford a very beautiful drive out of the city. This road is the old stage road between San Francisco and San Jose.

As far back as 1905 there was a serious congestion on the present Colma Road, and the Automobile Club of California at the time spent several thousand dollars to improve this old stage road. It is used considerably even now, but the north and south connections are badly in need of reconstruction.

The construction of the east side highway will automatically do away with most of the necessity for the use of the dangerous railroad crossing just south of Colma. About halfway between Colma and South San Francisco there is a very dangerous grade crossing with the main line of the Southern Pacific, the elimination of which should be included in the highway improvement plan. This can be done by either a relocation of the highway to the east side of the tracks and then crossing over the tops of the tunnel north of South San Francisco, or by an overhead crossing at the present site. The latter plan is probably the more feasible.

The California State Automobile Association has gone on record as favoring the early construction and improvement of the highways to relieve the traffic congestion down the peninsula and particularly of the one on the east side of the Southern Pacific tracks between Colma and Redwood City. The Association believes that too much haste cannot be exercised in getting this much-needed work under way.

The present plans provide for a 24-foot pavement. This is too narrow by far. A pavement at least 40 feet wide should be considered and then built of heavy construction. A narrower pavement than that will hardly care for the present traffic, let alone the normal increase that will naturally come about with the increased ownership of motor vehicles, the development of the country, the increase of population and the establishment of new lanes of travel when a bridge is built at San Mateo or Dumbarton.

Can Finance Highways

These highway improvements can be financed and an equitable adjustment of cost made by the creation of a "Joint Highway District" of San Francisco and San Mateo counties. The law is very broad and is peculiarly applicable to this situation.

The scheme as now advocated is to include a lower bay bridge proposition with the highway plan in forming the district. The San Mateo County Board of Supervisors has initiated the procedure by passing the necessary resolution, and the matter is now before the San Francisco Board for consideration. The public should brook no delay.

It is possible to get this highway improvement started and probably completed during the present season, but any delays will be fatal to that idea and the construction work delayed until next year. In the meantime the motoring public will continue to suffer.

The California State Automobile Association cannot urge too strongly upon those in authority the dire necessity of immediately putting the necessary machinery in operation for this highway project. The Association, along with other agencies, is investigating the relative merits of the two lower bay bridge projects and will continue to urge an investigation of the feasibility of bridging the bay at San Francisco.

But we can get action on the east side highway now. Let's have it!



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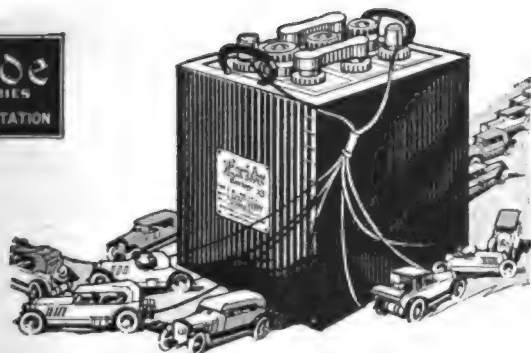
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DELIVERED HERE
War tax extra

HOWARD AUTOMOBILE CO.

The Largest Distributor of Automobiles in the World
Van Ness Avenue at California Street, San Francisco

PROSPECT 4000

OAKLAND

PORTLAND

When better automobiles are built, Buick will build them

HERE AND THERE IN MOTORDOM

Columbia Six Arrives

A new arrival on San Francisco's Automobile Row that occasioned no end of comment in motor circles was the new Columbia Six.

It was first displayed at the showrooms of J. W. Leavitt & Company on Van Ness Avenue during "Call of the Open Road" Week and received its share of admiration from the thousands of sightseers who visited the city's motor street during the annual spring festival.

The Leavitt organization will distribute the car throughout the California territory in connection with the Oldsmobile line of cars, which they have marketed for years here.

The Columbia Six is attractive in appearance and sturdily built from standard units of known value. Its specifications may prove interesting to the mechanically minded: Six-cylinder, 45 horsepower Continental Red Seal motor; Timken axles, front and rear; Stromberg carburetor; Auto-Lite starting and lighting; Durston transmission with Timken bearings; Borg and Beck clutch; Spicer universal joints; Gemmer steering wheel; Distel wheels; 31x4 cord tires; low-set, deep-cushioned seats; genuine leather upholstery; barrel lamps; heavy-weight, deep-drawn crown fenders; wheel-base, 115 inches; weight, 2,400 pounds.

The interest shown in the car by the public here indicates that it will be a favorite, and its low price should put it in the front rank of the fast-selling cars.

The financial stability of the builders of the car is being emphasized by executives of the Leavitt organization as one reason for



The New Columbia Six.

their being able to offer so much quality as such a comparatively low price. It is said that the combined capital of the companies building the car total well over the \$250,000,000 mark—a considerable-sized sum of money even in these days when we so casually refer to millions.

Conference on State Parks

The Second National Conference on State Parks, which has been called in the interests of State park development by John Barton Payne, chairman of conference, will be held at the Bear Mountain Inn, Palisades Inter-

Hanni Auto Repair Co.

BUICK EXPERTS

Marvel Carburetor Service Station
Stock of Carburetors and Parts

WE SPECIALIZE IN BUICK REPAIR WORK
AND REBUILDING WRECKS

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TEL. FRANKLIN 2176

SAN FRANCISCO, CALIF.

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These LINK-BELT SILENT CHAIN DRIVES have been thoroughly tried out on CADILLAC CARS. They will give you quiet and satisfactory service for many thousand miles. They are in stock at San Francisco and Los Angeles

ready to be installed in your car. Order direct or through your garage.

The LINK-BELT UNIT SILENT CHAIN marks an important step forward in the art of Silent Chain Driving as applied to automobiles.

LINK-BELT PACIFIC COMPANY
168-2nd Street, San Francisco 151-3 No. L. A. St., Los Angeles



To insure *unfailing* service at the lowest cost per job, use Kimkin towing equipment on your tow cars.

Write today for the most interesting booklet you have ever read. It describes in detail Kimkin Towing Dollies, Jacks, Wheel Pullers and Tow Bars.

KIMMERLE BROS., Manufacturers

683 Golden Gate Avenue, San Francisco

The Harvard Extra Spare Tire Carrier

enables you to carry two spare tires with absolute SAFETY. The Harvard Carrier is instantly attached to your regular spare—no straps, bolts or nuts—one minute to attach.



Showing Car with Extra Tire Locked in Position

If your dealer cannot supply you, order direct, stating size of tire.



PRICES

30 x 3½ size . \$7.00
Large size . . 8.50

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THE HARVARD MACHINE COMPANY

227-229 Mt. Auburn St., Cambridge, Mass.

(Patent Pending)

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"Largest West of the Mississippi"

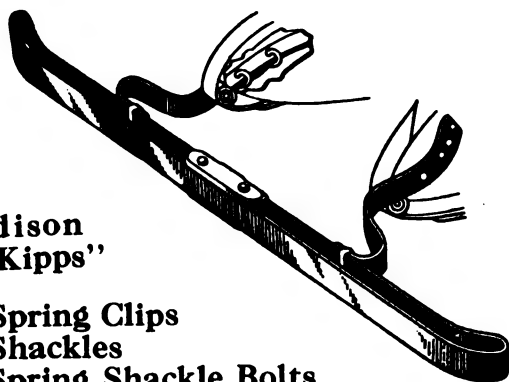
FOR AUTOS AND TRUCKS

CHROME VANADIUM and CARBON STEEL SPRINGS



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UNBREAKABLE, RATTLE and SQUEAK PROOF



Madison
"Oil Kipps"

Spring Clips
Shackles
Spring Shackle Bolts

CAMBRIA SPRING COMPANY

916 S. Los Angeles St., Los Angeles

The reason for the success of the Gill Battery

Last year not a single Gill Battery "came back" to us because of plate trouble.

A wonderful record—yet, it was to be expected—the internal construction of the Gill Battery provides for nothing else than perfect performance.

The outstanding feature of the Gill Battery construction is the absence of separators. The thick narrow plates assembled crosswise make separators absolutely unnecessary. With separators removed there is a perfect circulation of the acid solution. As a result plates do not buckle nor warp. And in saving the plates you get quicker recuperation, greater power and longer life.

Consider the wonderful record of the Gill when the time comes to install a new battery in your car. It is the battery you can buy with confidence. It has a two year guarantee. It costs practically the same as any other standard battery. Let us send you our illustrated folder.

GILL STORAGE BATTERY CO.

Incorporated

San Bernardino, California

Notice to Dealers:

Write us for territory still open.

Gill

BATTERY

The only battery that has successfully eliminated separators.

state Park, New York, from May 22 to 25, 1922.

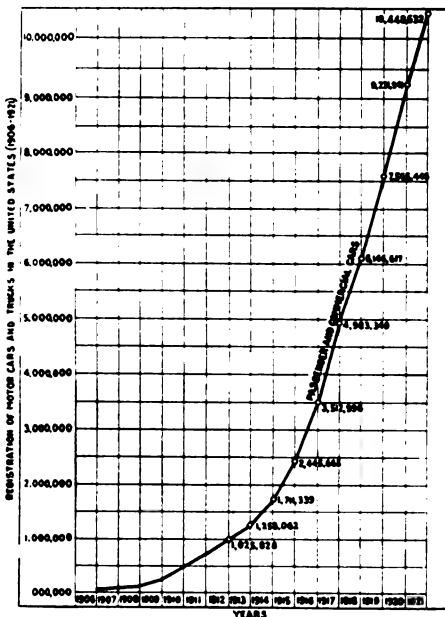
The first National Conference on State Parks was held in Des Moines, Iowa, in January, 1921, and since that time a great deal has been done in this work. The first meeting awakened a great interest in the movement, and the work of the various States has progressed steadily since that time. The importance of a country-wide development of State parks cannot be overemphasized. These parks, when well developed, produce revenue, stimulate travel to and through the State, preserve the beautiful native scenery and historical spots, and in many ways react to the benefit of the State. They will especially appeal to the motorist from the fact that they will make interesting stop-off places in connection with tours across the country. One of the features of these parks undoubtedly will be the establishment of free public camps, which have been so popular in the national parks.

Two days of the conference will be devoted to business sessions, while the remainder of the time will be utilized by trips of inspection through the Palisades Interstate Park, West Point, a new State Highway around Storm King, the New York Zoological Park, and the Bronx River Parkway. This will give the delegates an excellent opportunity to see the splendid State park development in that section.

Registrations Show Big Gain

With returns received from all States, the Bureau of Public Roads of the United States Department of Agriculture reports that the motor vehicle registration for the year 1921 totaled 10,448,632. This represents an increase of more than a million over the 1920 figures, or a number equal to the total number at the beginning of 1913.

The greatest increases in registration were in industrial sections, the agricultural sections in general showing a smaller amount of increase. No State reported a registration less than the 1920 figures. The total amount collected as fees of various kinds amounted to \$122,478,654.



It has been expected that the registrations this year would show a greater falling off in the rate of increase than the figures reported show. The increase this year continues at approximately the same average rate that has been maintained for the last seven years

and shows no indication of the near approach of a condition of saturation in the supply of motor vehicles.

With more than ten million vehicles in use and the owners demanding improved roads over which to operate them, the question arises as to how long the country will have to wait for a connected system of highways covering the whole United States, say officials of the bureau.

The recent Federal Highway Act provided for the construction of a connected system of highways consisting of not more than 7 per cent of the roads in each State, and made an initial appropriation of \$75,000,000 to be used in conjunction with State funds. The system to be built is now being outlined, and it will comprise about 180,000 miles of road, included in which there will be about 60,000 miles that are already completed.

With an annual program based on a Federal appropriation of \$75,000,000, and assuming that the States will continue to match the Federal funds in the same ratio as heretofore and that the average costs of the roads built will be \$20,000 a mile, officials say it will take fifteen years to complete the proposed system. If the Federal appropriations are made at the rate of \$100,000,000 a year, the system can be completed in ten years, and if only \$50,000,000 is appropriated annually, it will take twenty years to build it. The question is, How long can we wait?

The Pacific Northwest Tourist Association

There was a time when the State of California practically monopolized tourist travel to the Pacific Coast. That was before some of the most enterprising public-spirited citizens of the Pacific Northwest conceived the idea that they might just as well sell their scenery and their climate to the nation

THE SHORT WAY FERRY

SHORTEST AND MOST DIRECT AUTOMOBILE ROUTE BETWEEN

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Travel via the "SHORT WAY FERRY" on the fastest and most modern AUTO FERRY BOATS afloat.

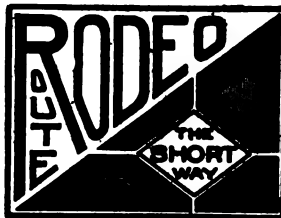
Two Boats—HALF HOUR SERVICE

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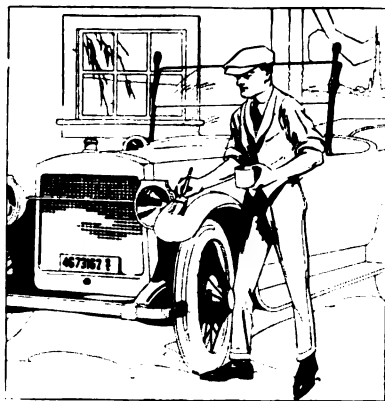
Rodeo, California



NO CURVES—NO GRADES

TIME SCHEDULE			
LEAVE RODEO		LEAVE VALLEJO	
DAILY		DAILY	
7:00 a.m.	3:00 p.m.	6:45 a.m.	2:30 p.m.
8:00 a.m.	3:30 p.m.	7:30 a.m.	3:00 p.m.
8:30 a.m.	4:00 p.m.	8:00 a.m.	3:30 p.m.
9:00 a.m.	4:30 p.m.	8:30 a.m.	4:00 p.m.
9:30 a.m.	5:00 p.m.	9:00 a.m.	4:30 p.m.
10:00 a.m.	5:30 p.m.	9:30 a.m.	5:00 p.m.
10:30 a.m.	6:00 p.m.	10:00 a.m.	5:30 p.m.
11:00 a.m.	6:30 p.m.	10:30 a.m.	6:00 p.m.
11:30 a.m.	7:00 p.m.	11:00 a.m.	6:30 p.m.
12:00 p.m.	7:30 p.m.	11:30 a.m.	7:00 p.m.
12:30 p.m.	8:00 p.m.	12:00 p.m.	7:30 p.m.
1:00 p.m.	8:30 p.m.	12:30 p.m.	8:00 p.m.
1:30 p.m.	9:00 p.m.	1:00 p.m.	8:30 p.m.
2:00 p.m.	10:00 p.m.	1:30 p.m.	9:00 p.m.
2:30 p.m.	11:00 p.m.	2:00 p.m.	10:00 p.m.
	12:00 p.m.		11:00 p.m.
*Sundays and Holidays Only			

*Sundays and Holidays Only



WANDERLUST

At this time of year the Wanderlust begins to stir. Obey that impulse and get out into the open. Put a new finish on your car if it looks dingy and worn. This new dressing can be easily fixed by yourself or Auto Painter. To rejuvenate your car we suggest the following:

Fuller Auto Enamel, obtainable in seven colors. Pints and quarts.

Speedite Auto Finish, repaints and varnishes in one application. Ten colors.

Fuller's Mohair Top Dressing, for all auto tops.

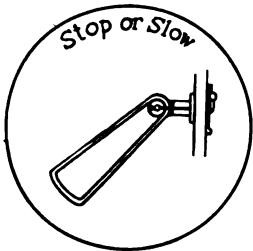
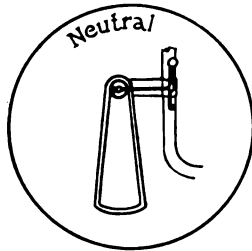
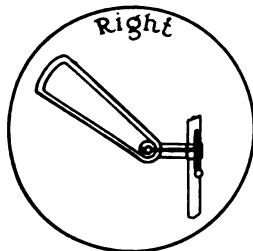
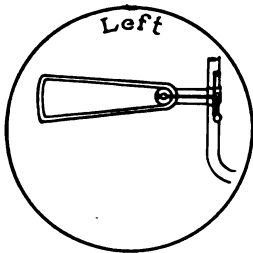
Fuller's Leather Dressing, for all leather and imitation leather surfaces.

At your Dealers

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"Since '49"

The Inter-State Auto-Signal



WHICH is preferable? Compare the cost of the *Inter-State Signal* with that for Collision Insurance. With the latter, one is reimbursed *after* the accident; with the former the accident is *prevented*. You should have both, just as you should have both of your hands free to drive your car.

The *Inter-State Signal* is endorsed by the Motor Vehicle Department of California. It complies with and meets all requirements of State Laws and City Ordinances.

The Inter-State Signal is attached to your windshield in 30 seconds.

Buy from your dealer. If he can't supply you write to us for descriptive literature, or mail check and the Signal will be sent to you post-paid with the **guarantee** that your money will be refunded if you decide to return the Signal within 10 days.

PRICE \$5.00

The Semaphore blade is brilliantly and durably finished in target red enamel. Other parts enameled black.

No springs or complicated parts

No electro magnets

No draft on storage batteries

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Thrown in one second with one finger

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WITH BATH



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GALLON CAPACITY THERMO-JUG

Guaranteed to keep foods or liquids hot for 12 hours, cold for 24

Has opening large enough for foods or liquids

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BRAKE LINING**

INSTANT response to brake pedal or emergency lever is what you have the right to expect. Failure may mean disaster.

EMSCO Brake Lining gives instant, unfailing response. It costs no more. Simply say, "Line my brakes with Emsco Brake Lining."

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Distributors
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[In writing to advertisers please mention MOTOR LAND]

as California. They did not do this in a spirit of competition or rivalry, because the Southland and the Northland are very different in the type of scenery and also in the nature of their products. These gentlemen got together and formed what is known as the Pacific Northwest Tourist Association, one of the most unique organizations in any part of the world, as it comprises two States in the Union and one Province in Canada.

They banded themselves together for the purpose of selling their truly magnificent scenery to the rest of the world, and through this campaign drawing attention to the almost limitless natural resources and undeveloped latent wealth of these three commonwealths. They were successful in another unique way—namely, in being financed by the state governments of Oregon and Washington and the provincial government of British Columbia.

For five years this association has conducted a national advertising campaign with dignity, attention-compelling power and, conforming to all the elements of good advertising, with truth. They have increased the annual revenue from tourist travel to the Pacific Northwest from seven millions to between forty and fifty millions, and this year expect to increase it still more.

The Pacific Northwest—Oregon, Washington and British Columbia—appeals most strongly to Californians. In the first place, it is on their own Pacific Coast. This association is cementing friendship all along the Coast and is carrying out the treaty of unity which the Ad Clubs of California have started. It has been doing this for five years.

This year they expect a very large number of automobiles, not fewer than 50,000 from California.

Lathan in New Home

Relieving the need, caused by a consistent growth of business volume, for more floor space, the Lathan Auto Supply Company has recently moved into its new home, built expressly for it at 1454-66 Pine Street, San Francisco.

The new quarters of the company are housed in a handsome one-story structure giving 14,000 square feet of floor space,



New home of Lathan Auto Supply Co.

which has been arranged to care for the various departments of the concern with the greatest efficiency.

Fully a third of the floor space is given over to the manufacture of the Critz Super-pressure lubricating system, made by the company. This accessory is a California invention and offers several patented features in meeting lubricating needs most conveniently, including a swivel head which makes all bearings easily accessible, a ball check at the nozzle of the device which automatically

cuts off the flow of gease when lubrication is completed, and a pressure development of 2,000 pounds.

In addition to the manufacture of the Critz lubricator, the Lathan Company is the Pacific Coast distributor of Zenith carburetors, a nationally known product, and has recently taken another line in the Steel Wings shock absorber, designed for all makes of cars.

Ample room for efficient service in handling these lines is provided in the new building as well as conveniently arranged office space.

Founded in 1911, the Lathan Auto Supply Company has made a record for consistent growth and progress that is typical of the majority of Western coast concerns, whose products are reaching wider fields all over the country every day.

Officers of the Lathan Company are: J. E. Lathan, president; S. R. Walker, vice-president; and A. S. Lathan, secretary and treasurer.

New Camping Accessory

A new accessory attracting attention from prospective campers is a Thermo Jug, manufactured by the F. J. Matheison Company of San Francisco. This accessory holds one gallon of either food or liquid. The opening is sufficiently large to accommodate both. Its manufacturers assert it will keep liquid hot for twelve hours and cold for twenty-four hours. The glass container in the event of breakage can be renewed without difficulty.

MORRISON & CHAIX

Automobile Repairing

SPECIALISTS

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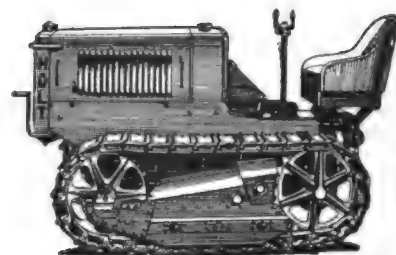
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Phone
PROSPECT 16

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CATERPILLAR
Reg. U.S. Pat. & Tm. Off.

T-35 Tractor

Size has been limited without sacrificing power, weight is lessened without imperiling strength in this latest Holt contribution to economical power forming. Only the development of new qualities of steel and better methods of heat treatment have made possible the product on of "Caterpillar" T-35 Tractor. It is only 48 inches wide and 52 inches high, weighs but 4,000 pounds, yet develops a liberal surplus of power over its 14 drawbar-horsepower rating. You will want full information regarding this new Holt achievement. Write for it now.

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First-Class Hotel in Fresno
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Hotel Sacramento

Absolutely Fireproof

SITUATED IN THE HEART OF
SACRAMENTO—CONVENIENT
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ONE OF THE FINEST HOTELS IN
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HOTEL SACRAMENTO

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for quick and satisfactory service*

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Tires, Tubes, Oil, Grease, Accessories
TO BE HAD DAY OR NIGHT AT ANY TIME
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Manteca..... Perry's Travelers Garage
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Martinez..... Hotel Oehm
Martinez..... Martinez-Benicia Ferry
Martinez
Martinez Garage & Machine Shop
Marysville..... Western Hotel
Marysville..... California Garage
Marysville..... Dunning Bros. Garage
Maxwell..... Maxwell Garage
McArthur..... Union Garage
McCloud..... Hotel McCloud
McCloud..... McCloud's Garage
Medford, Oregon..... Hotel Medford
Merced..... El Capitan Hotel
Merced..... Hotel Merced
Merced..... Hansard's Cafe (Restaurant)
Merced..... Gateway Garage
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Merced

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Modesto..... Wm. J. Silva Motor Car Co.
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Prather's Garage & Machine Shop
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Morgan Hill..... Reliance Garage

Napa..... Conner Hotel
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Newcastle..... Blair's Garage
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Palo Alto..... Palo Alto Garage
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Patterson..... Cortner & Flake Garage
Patterson..... Hotel Del Norte
Petaluma..... Hill Plaza Garage
Petaluma..... Petaluma Garage
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Pittsburg..... Los Medanos Hotel
Pittsburg..... W. & W. Garage
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Placerville..... Placerville Garage
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Roseburg, Oregon..... Umpqua Hotel

Sacramento..... Hotel Land
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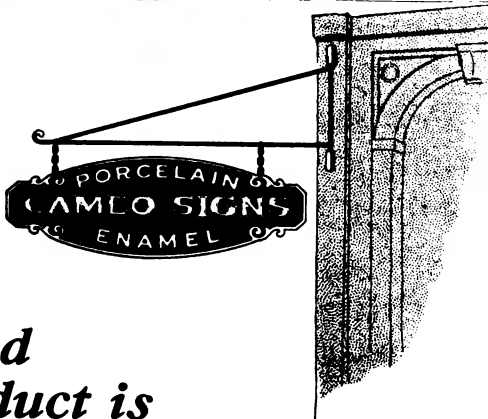
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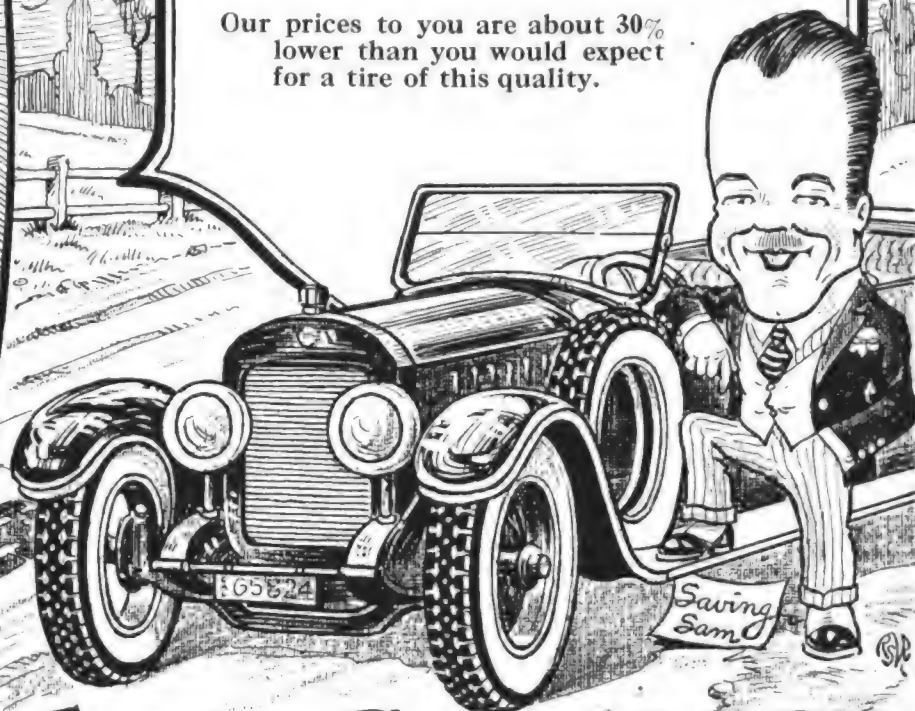
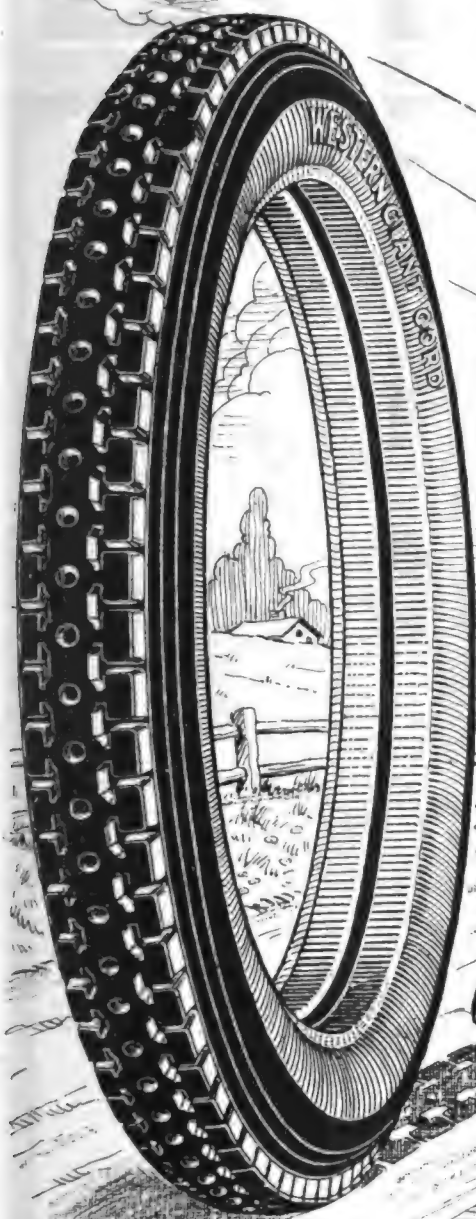
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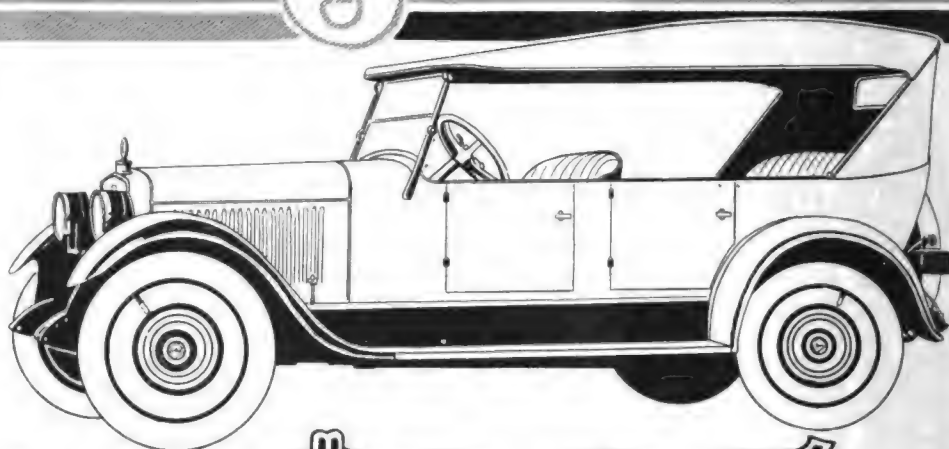
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The Pacific Coast Magazine of Motoring

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MEMBER AUDIT BUREAU OF CIRCULATIONS

Volume X

JUNE, 1922

Number 6

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A GILLIG TOP will greatly increase the pleasure you get out of YOUR automobile —

Unless you have ridden under a New Gillig Top you can have no idea of the added enjoyment it gives to motoring.

Clear vision and perfect comfort at all times, regardless of wind or weather. And its beauty of line and finish will add to the appearance of any car.

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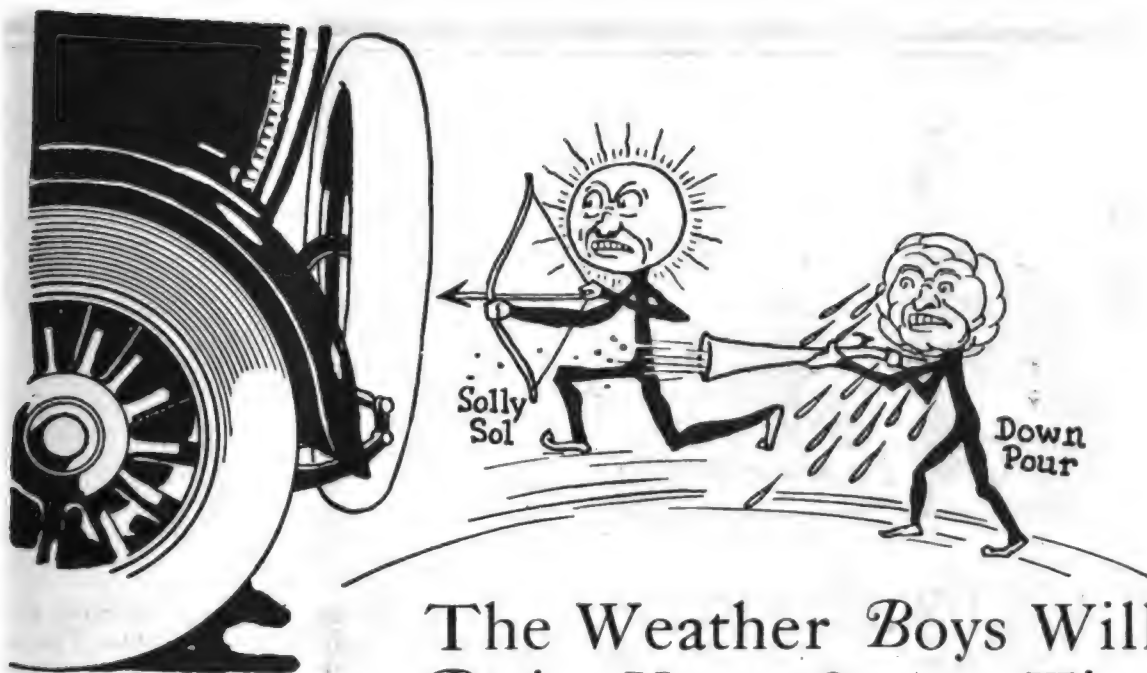
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Solly Sol and Down Pour, the weather boys, have declared ceaseless warfare against that spare tire of yours.

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Conservative estimates show that in America alone 5,000,000 tires are wasting away on the carrier, checked, hardened and destroyed by the Weather Boys.

Your tire, when it came from its maker, was carefully wrapped to protect it from heat and light rays. If you expect that tire to give you the maximum of service, you must continue to protect it when not in use.

The cost of an Angelus Tire Cover as compared with that of the tire which it saves for you is but a trifle—it is a lifesaver for your pocketbook.

Angelus Tire Covers are made from Meritas Cloth, and are guaranteed not only by the makers of the material but by us as well. They are cut after carefully worked out patterns to provide a perfect glove fit—no wrinkles and bulges, only a smooth “full dress” appearance.

Each cover comes to you with eyeleted drain holes at the bottom—an exclusive standard feature of the Angelus.

Go to your car or accessory dealer today and have him put an Angelus on your spare Tire—insist on the Angelus—look for the guarantee.

Ask to see the new Angelus method of emblem and monogram painting.



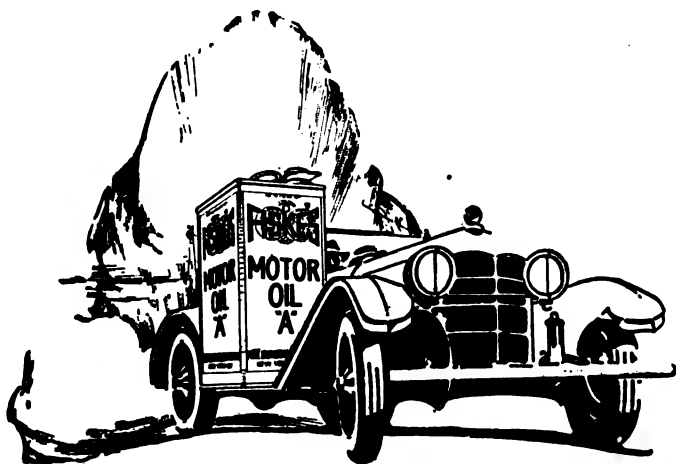
the tire cover with the Drain Hole

Angelus Tire Covers

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"WEAR DEFIER"

are fitting companions for the aristocrats of the automobile world.

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(Sincerity—"Being in reality what it appears to be; truth; without deception."—Webster)

Sincerity is the motive force behind all Studebaker advertising. When in 1919 Studebaker brought out its new series cars it described them simply as—

"Beautiful in design"

"Thoroughly modern"

"Mechanically right"

Put to the acid test of time and the judgment of the public the sincerity of that statement has been proved. It is evidenced in the ever increasing number of sales of Studebaker automobiles, which, in 1921 and the first quarter of 1922, surpassed all other six-cylinder cars. And today Studebaker is "the largest producer of six-cylinder cars in the world."

What has given Studebaker its remarkable leadership?

Has it been a victory of salesmanship, of organization?

No, it has been the triumph of a sterling product, backed by 70 years of honest merchandising and square dealing.

"Truth is Mighty and Shall Prevail"

Studebaker offers a wide choice in 3 chassis designs and 12 body styles.

\$1275 TO \$3095

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This is Another Studebaker Year

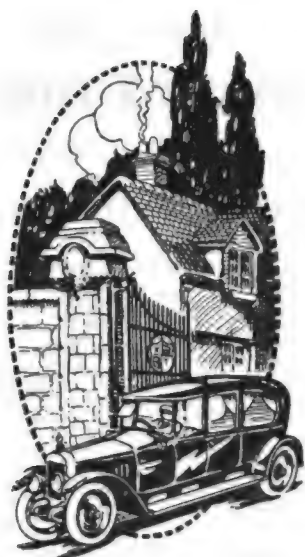
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CURRENT COMMENT



Radio and The Automobile

THE advance in radio engineering has been the talk of the world and his wife for many months past. How will it affect motoring? It does not require a great tax on the imagination to forecast a day when communication will be as simple a matter as transportation and when the two will go hand in hand.

Every day brings a new achievement in the use of radio. This touring season hundreds of California motorists will take along with them a suitcase full of radio apparatus that will provide a pleasing recreation for the motor camp. Radio sets have been put into use on motor cars for both sending and receiving and soon a means will be developed to keep the motorist, no matter how far he travels from home or into how solitary a wilderness he essays to drive, constantly in touch with the progress of the world and in touch with business or home affairs.

Not long ago the radio was used for guiding torpedoes in their course and in exploding them at considerable distances. Now an inventor has develop-

ed a "control" that directs a motor car in traffic from a car some distance behind. Probably the next war will be fought through materials rather than men if this device can be so perfected as to reach to greater distances.

With the astonishing progress made by this new craze thus far, who can foretell what wonders there are to come? Perhaps we may find a new way of propulsion for motor cars which will revolutionize the industry; perhaps we shall yet have a radio engine that will be trouble-proof and everlasting.

Certain it is that eventually the radio will be as common a part of the equipment of a motor car as the electric starting and lighting systems, and the "little box on the dash" will do away with worry of stalling on the lonely mountain highways and will serve as entertainer, comforter and guide.

Road bulletins, announcements of vital interest to motorists—all these things will some day be broadcasted by automobile clubs through the radio-phone, and at that time every car

owner "in tune" will be able to keep up with the rapid progress of highway building and can know in an instant the exact condition and direction of the road which he wishes to travel.

Truly, the end is not yet in this age of invention. Whether the radio will be developed into a vital element in the automotive world or simply as an accessory for a further enjoyment of the Call of the Open Road is yet to be determined. But one thing is certain: the development of this distinct new feature in the life of a people spurs on the mind of man to new achievement and sweeps away the cobwebs of self-satisfaction that so often clog the wheels of progress.

What a change has been made in our modern life since the advent of the motor car! The life of the automotive industry covers almost the whole field of achievement in the line of modern invention. From it have come the sinews of war, an increase in efficiency, and a stimulus to the imagination that has no bounds.

The Lincoln-Victory Highway Controversy

MAKING a mountain out of a molehill" is the way in which C. C. Cottrell, manager of the Good Roads Bureau of the California State Automobile Association, characterizes the supposed controversy over the relative merits of the two roads crossing Western Utah and Northern Nevada, units of the Lincoln and Victory Highways, respectively.

Mr. Cottrell was state highway engineer of the state of Nevada from 1918 to 1921 and in this position was able to gather first-hand data concerning the conditions on the two routes. He has contributed a sane discussion of the merits of the two routes for this issue of *MOTORLAND*, and it goes far toward "clearing the atmosphere" of

vague assertions and counter-assertions made by proponents of the controversy.

The effect of the so-called controversy has been the usual one, that is the effectual tying up of road construction programs and a general antagonistic stand over the whole matter on the part of the districts traversed by the two routes. A severe set-back on these important units of the transcontinental highway will follow this continual bickering.

The conclusion to which Mr. Cottrell comes after summing up the various points of the supposed controversy are: first, that both road links in the state of Utah can be built without any unusual problems confronting the engineers in charge; second, the State Road Com-

mission of Utah appreciates as much as anyone the necessity of making adequate connections with both highways; third, investigations are being made of the different routes by the engineers of the United States Bureau of Public Roads, the state road commission of Utah and the highway department of the state of Nevada. From these investigations a concrete knowledge of the proper procedure will come.

In the meantime, it is well to call a halt on bickering and dubious assertion and denial, so that the whole-hearted cooperation of everyone will be enlisted toward an actual commencement of work on this important connection for transcontinental traffic.

THE NEW BOULEVARD TO THE TOP OF TAMALPAIS

Scenic Wonders of Marin Opened by Route to Crest of Famous Peak

By VONARD FRASER

HAVE you ever followed the Rommany Patteran to the summit of Mount Tamalpais? Through forests of redwood, by mountain lake and stream, over hill and down dale, up to the clouds, each step forward brings into your ken a new panorama of mountain and sea and sky.

Soon you will be able to step into your car and waft your way to the triple-headed summit of the hoary old peak in the space of an hour. The new Ridge Crest Boulevard will be the motor route to the summit, and under the plans of the engineers who are now at work grading and dragging the highway the road will be completed before the end of the summer touring season.

The new highway to the top of Tamalpais will be one of the most scenic roads in the world. From the vantage points along the way spreads a panorama more extensive, perhaps, than that from any other mountain in the country, as Tamal towers so high over the surrounding mountain chain that the horizon is limited only by the mists that cling to the sea and the clarity of the ozone toward the Sierra Nevadas.

"Over the Hills"

The approach to the boulevard is by the regular "over the hills" road from Fairfax to Bolinas, and at Ridgecrest Lodge the new route shunts off up and down over the rolling hills on the shoulders of Tamalpais. The highway is twenty-four feet in width with dangerous mountain turns avoided. It is being surfaced with crushed rock. Drainage is of the best, as the road clings to the crest of the hills, and this will prevent washouts. There are no points where the road does not lie in range of the sun and it will be passable in almost any weather.

No trucks are to be permitted on the road, which will be a toll proposition, the money received in tolls going to keep up the maintenance crew which will be on duty throughout the year. When the grading is completed the maximum climb will be a ten per cent gradient, which can be made with ease by any make of car without resort to low gear.

The new road will cost approximately \$100,000. It reaches the tavern by way of Rock Springs and the mountain theatre where the mountain plays are produced each year. The toll gate will be located at the Ridgecrest lodge and service stations and hotels

will be erected at both ends of the road. A telephone line will be strung the entire length of the route for the accommodation of motorists using the highway. Telephone booths will be located every mile.

Open by July 4

The road is now open as far as Rock Springs, and the entire route, if present

Gate, the ocean and the Farallones, with Bolinas Bay and Stinson Beach in the immediate foreground. To the east lies San Francisco Bay, and seven counties may be seen from the summit. On a clear day, with a glass, Mount Shasta can be seen on the northern boundary line of the State, while St. Helena, Diablo and Mount Hamilton loom out in the nearer horizon.

The start of the new highway may be approached either from the San Anselmo side through Fairfax or by way of Stinson Beach. There is a winding, picturesque road through Manzanita canyon and Tamalpais valley, threading through shady lanes and pretty, wooded slopes, with now and then a picture of the open sea framed by the circling branches of the wind-torn oaks.

Tamalpais 2,700 ft. high

The old mountain sentinel of the Marin peninsula stands 2,700 feet in the clouds and when the fogs roll down its precipitous slopes it presents an awe-inspiring appearance. Forest and chaparral cover its sides and many a tiny creek rolls down from its craggy heights. In the great canyon basins of the shoulders of the mountain are watersheds that supply an abundance of pure spring water to the Marin County inhabitants. Here lie Alpine Lake and the great dam.

All of the country that lies about Tamalpais is storied in legend and history. The Nicasio Indians used to inhabit the region and in "Tamal," meaning "coast," and "pais," meaning "country" or "mountain place," from the language of the Nicasio tribe, is found the derivation of the name of the mountain peak.

The ascent up the mountain side is one that discloses new beauties with every step of the way. "Chaparral takes the place of redwood," writes a tourist of his first trip to Mount Tamalpais, "and slowly the country below begins to unfold; towns appear in miniature, and hills which on close approach have distinct characteristics now merge into one another, forming an unbroken mass which stretches west to the Pacific, on whose sapphire bosom may frequently be seen the dim outline of the Farallone Islands, while to the southward Point San Pedro and the city are visible, and San Francisco Bay with intricate windings can be seen to join San Pablo and Suisun bays on the east.



In the Redwoods on the shoulders of Mt. Tamalpais

plans are carried out, will be completed by July 4.

Over the entire length of the boulevard there is a wonderful view on every side. To the west lie the Golden

Diversity of Views

"It requires many trips to appreciate fully and to comprehend the marvelous diversity of views spread before one, while the variety of superb effects to be witnessed from this mountain cannot be found in a single visit.

"To watch the wonderful radiance of sunrise when Apollo mounts in his chariot of fire above the Berkeley hills, or to see a billowy floor of fog, outspread before one, obscuring the lower world and leaving nought save this mountain peak unwrapped by the fog mantle; and then to witness the pale light of the moon marking a silver pathway on the bay, and casting grotesque shadows on the landscape, is to visit fairyland. These are only a few of the beauties garnered here."

On the top of the mountain are the tavern and the marine observatory, where ships are sighted scores of miles out at sea. Many trails wind about the mountain sides with shadowy picnicking nooks located here and there, with scores of cool, palatable springs and bracken and fern that convert the rocky slopes into veritable Edens of delight.

Fragrance of Wildflowers

Near the tavern is located the government weather bureau station with the great seismograph that checks up on all movements of the earth's crust. The air is intensely exhilarating and in the spring and early summer the fragrance of azaleas and wildflowers of every description is wafted about on the breezes.

From the start of the new highway at Ridgecrest and from vantage points along the way may be glimpsed the outlines of the lagoon of Bolinas and the gleaming white sands of Stinson Beach. Bolinas derived its name from the Indian dialect and the word is said to signify "stormy" or "untamed."



The new Mt. Tamalpais Highway—88 feet in width

This was the haunt of the Tamal Indians in the early days of California and it is probably one of the most ancient of the settlements on the coast.

A Romantic Story

Over the very road that leads to the Ridgecrest Boulevard, the winding mountain highway from Bolinas over the hills to San Anselmo and San Rafael, came a horse with two riders in May of 1850. They were the principals in one of the first romances of Marin County, and their story is of interest as their path led over the very road on which thousands of motor cars will be traveling this summer season. Here is the story as told by Helen Bingham in her attractive sketch of the county of Marin:

"It was a fair spring morning in May. A single horse with two riders might have been seen threading its way up the steep mountain trail leading from

Bolinas to San Rafael. The bright, girlish face of the first rider peered wistfully from under the soft folds of her mantilla, while the young caballero, on the crupper behind, whispered to her in those sweet, melodious tones unheard save from a liquid Spanish tongue. Of the purport of these whispers we can but judge, for on arriving at the Mission they were greeted by a joyous peal of wedding bells.

"The groom was Francisco Sebrean, the bride, the beautiful Señorita Maria Briones, daughter of the pioneer. This was the first marriage in Bolinas, and the celebration which followed their return to the Rancho was the most notable ever witnessed in that region. Dancing, feasting, music and gayety continued until the gray dawn appeared to touch the surrounding hilltops and proclaim the approach of another day."

The Lone Tree Trail

On the "Lone Tree Trail" which leads from Bolinas over the hills to Mill Valley, where the Dipsea hikers of the Olympic Club make their annual run, is the site of the cabin of Thad Welch, the artist, who is known as the "Artist of Marin." Through his genius many of the scenic beauties of the shoulders of Tamalpais have been made known to the world. A short distance away, the trail descends a steep hill and at the foot is the great Muir Woods canyon. The canyon runs diagonally with the coast line and starts on one of the mountain's western slopes.

"Bending low over the little stream which winds through this canyon," writes Miss Bingham, "huge sprays of

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Bolinas and Stinson Beach as seen from new highway

MILADY MOTORIST

The Spotlight on Summer Sport Clothes

By EDITH M. GARFIELD

OUTDOOR sports are becoming more popular every day, and the enthusiasts who flock to the links, tennis courts and beaches, as well as those who have taken to automobile camping trips and long tours, represent the greater portion of the population.

The effect of this growing interest in sports, of course, has some bearing

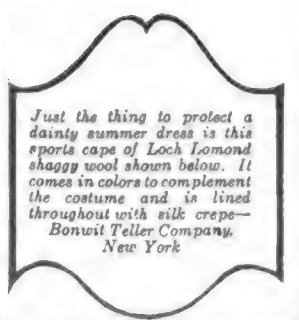
sports wear. There are such attractive knicker costumes being shown in the smartest shops that it is evident that no feminine charm need be lost by this wearing of attire that heretofore has been considered masculine. It was considered shocking indeed when women rebelled against the flowing skirts allotted to them for horseback riding, and took to riding breeches,

but now it is the mid-Victorian divided skirts that rather shock our sense of the fitness of things.

It's a distinct pleasure to wander through the shops at this season of the year, even if one is not there to buy. It seems as if there never were such attractive colors and such a variety of delightful materials to choose from. For the tailored miss designers



To top this little straight-line suit of tweed she has thrown a smart vari-colored scarf around her neck. It brightens up the soft pastel shade of the suit, and blends with the trim little sport hat of straw and chenille—
Knox Hat Company, New York



Just the thing to protect a dainty summer dress is this sports cape of Loch Lomond shaggy wool shown below. It comes in colors to complement the costume and is lined throughout with silk crepe—
Bonwit Teller Company, New York



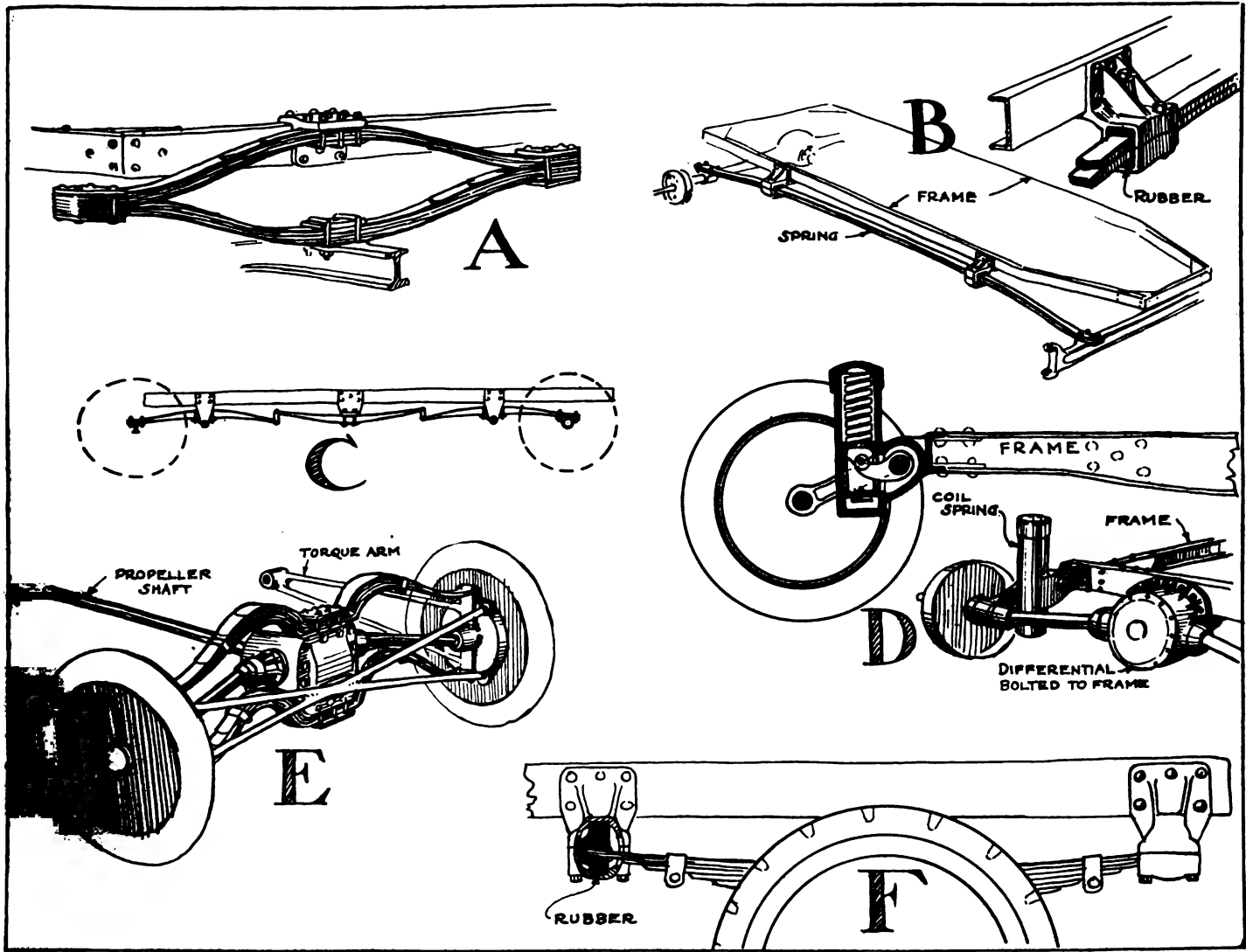
Resting at the ninth hole, just to give us a chance to see her smart knicker costume of striped homespun. The coat features one of those throw scarfs that are so popular, and note the use of fringe—
Knox Hat Company, New York

on the feminine wardrobes, and sport clothes form a most important item. The tendency is to keep sport clothes simple and comfortable, and although "dress-up" clothes run to trailing sleeves and skirts that hug the ankles, the sport costumes favor short skirts and models that cannot possibly hamper the movements of the wearer who indulges in strenuous exercise.

The mere mention of comfort and freedom of movement brings to mind knickers. This exceedingly sensible costume is a great favorite among women, and is seen everywhere for

have created stunning suits—mostly of severe straight-line effect—in tweeds and homespuns—but such tweeds, and such homespuns! Lovely soft pastel shades, brilliant tones, too, and the smartest of checks and stripes. That frivolous parody, "In the spring a young man's fancy vests and socks come into view," has its few grains of truth. There is something about spring that inspires us to blossom forth in the gayest sort of raiment, and there is a certain carefree delight we have in tossing off the somewhat subdued

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BETTER SPRINGS ARE COMING

Spring Bolts, Grease and Oil Cups Eliminated

By HAROLD F. BLANCHARD

SPRINGS are going to be different. All over the world wherever automobile springs are made engineers are at work on the problem of making the automobile easier riding. Recently several very promising solutions have been announced. All of them are radically different from present designs. Nevertheless, their construction appears sound; they are neither freakish nor tricky. Tests of these new spring types bear out in a convincing way the hopes and claims of their inventors. And the names attached to some of these springs are sufficient guarantee of their merit.

Not only will the new springs iron out effectually the wrinkles and creases in highways and byways, but it is little less than astounding to note that the new designs have, almost without exception, eliminated the spring bolt.

It seems as though spring designers had agreed that the spring bolt must go, and with it, of course, disappears the troublesome and mussy grease and oil cups. On the average car in use today there are eight spring bolts requiring individual lubrication; eight points where wear occurs and rattles develop. What a boon it will be to the motorist when this nuisance is done away with; and most of the new designs give this highly desirable advantage.

Spring Bolts Eliminated

Perhaps the most promising of the new springs (A) is the one invented by an American. At first glance this new product resembles a full-elliptic spring and it really must be so classified, but further inspection shows that the usual spring bolts which hold the

ends of ordinary springs of this type together are missing. Top and bottom halves of this spring are given reverse curves at their extremities, and thus each half resembles a bow. The ends of the two bows are clamped together so that as the spring is compressed the ends simply move out further thus making spring bolts and shackles unnecessary.

This spring is remarkably easy riding because it accommodates itself automatically to the load. Every motorist knows that a car rides better when it is heavily loaded, and this is largely because the springs must be designed to carry a heavy load, and consequently they only work to perfection when bearing this weight. If the same car were equipped with weaker springs it would ride almost as

(Continued on page 36)

TIRE OVERLOADING AND UNDER-INFLATION

Wherein an Expert Diagnoses the Various Ills of the Shoes of Your Automobile

By L. R. DAVIS

OVERLOADING and under-inflation have an almost identical effect on pneumatic tires. The motorist who reduces his tire pressure to gain extravagant riding comfort or who puts on too heavy a load should not overlook the fact that doing these things leads to early troubles that too often are credited to some defect in the construction of the tire.

The skilled engineer can tell at a glance when the tire finally breaks down in this way just what has caused the trouble. When he opens the carcass of the tire he finds that the plies of fabric have pulled apart, and knows that the tire has been run while over loaded or under-inflated.

A tire is constructed with the idea that it is to be inflated to such an extent that it will retain its curved outline as the wheel revolves. If there is not enough air in the tire, or if it is over loaded, the part of the tire that rests on the ground will unduly flatten out instead of remaining rounded. This flattening is called "distortion" by tire engineers.

A simple experiment will illustrate clearly just what takes place within the tire when it is being deflected or distorted and why too great distortion is so destructive to tire life and why such emphasis is placed upon the importance of keeping this distortion down to the lowest point consistent with good riding comfort. Take a book with flexible covers and make a mark straight across the ends of the pages at the top. The mark should be made about two-thirds of the distance from the binding to the other side. Bend the book sharply across the middle. You will note that as the book bends the line begins to lengthen and to assume a diagonal position. This means that the pages have moved, some of them a considerable distance.

Built Up of Layers

A tire is built up of layers, resting one upon the other, just as the pages lie one upon the other in the experiment just outlined. But there is this essential difference, that the pages are not fastened together and slip over each other easily when they are bent, whereas between the plies of a tire are layers of rubber gum which bind the plies together. When the plies are bent out of position they cannot slip over each other as the

pages do, and if the tire is not to be injured there must be no greater distortion of the plies than is afforded by the stretch in the layers of rubber. If there is too much distortion the layers of rubber will be stretched too far and will gradually be torn away from the plies of fabric.

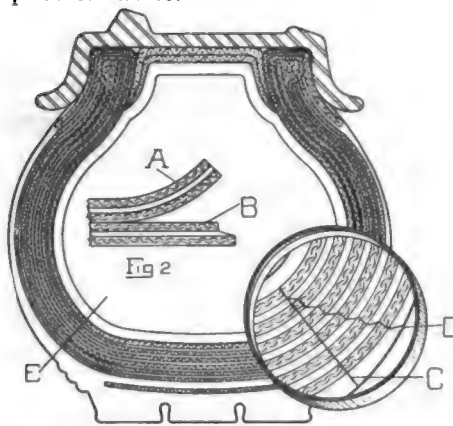


Fig 1

Diagram Courtesy United States Tire Company

Reference to Figure 1, representing the cross section of a pneumatic tire mounted on a rim complete with its inner tube and flap in position, will give the reader a clear idea of how a tire appears when overloaded or under-inflated.

It is pretty well understood that a tire as cured is approximately the shape it is to assume when fully inflated. This is a highly important feature of tire construction, for only by curing the tire in this shape can the minimum amount of strains be limited within the structure itself.

When the tire is inflated and supporting a load it assumes a shape quite like the shape pictured. It will be noted that there is a decided flattening of the true circular shape the tire originally had and a short bending of the plies as shown at "E"; and owing to the tire being constructed of several plies of fabric, there must be some differentiating medium to balance the difference between the movement of the inner, intermediate and other plies of fabric; also some bonding medium to hold the plies together tenaciously, enabling each to move somewhat independently of the others and still allow the complete tire section to act as a unit.

The best bonding medium for this use has been found to be compound

rubber; consequently each ply of fabric is impregnated and coated with a thin layer of this highly developed substance. In addition to acting as a bonding medium this layer of rubber also functions as a protecting coating preventing the alternate plies of fabric from coming in contact with one another, thus preventing the chafing action between the plies that would eventually destroy the fabric if some means were not used to keep them separated.

Effect of Abnormal Distortion

The magnified section of the tire illustrates what actually happens when the tire section is abnormally distorted. The straight line drawn across the tire section at "C" moves to position "D." This movement, it will be noted, increases and is greater on the outer plies than it is on the inner ones, and to compensate for this movement it is essential that the thin layer of rubber be of sufficient quality to withstand without rupture the strains due to such movements. There is of course a limit to this movement, and when a tire is operated under-inflated or overloaded the fabric movement becomes so great the layer of rubber soon ruptures and ply separation begins.

This unequal stretch between fabric and rubber can be seen by referring to the enlarged sketch Figure 2, representing two plies of fabric separated by a layer of rubber as at "A," much the same as they would appear in a tire that was not supporting a load. When a tire is supporting a load there is flattening at the point coming in direct contact with the road. This action is quite clearly seen at "B," where the two plies of fabric have been flattened out. There is a noticeable difference in their length; this difference is compensated for by the stretching of the thin layer of rubber separating them. This is exactly what happens between each ply of fabric in the tire when it is subjected to a load; and if this load is not in proportion to the inflation pressure, the layer of rubber soon breaks away from its fastening, allowing a frictional movement that soon weakens the casing to such an extent it can no longer withstand the inflation pressure and the inevitable happens with a report that leaves no doubt in the rider's mind as to what has happened.



A New Idaho Wonderland

Below on the left are shown Colonnade and Rainbow Falls.



Union Falls and an unnamed 130-foot fall in Boundary River are shown above on the right.

Photos Copyright by William C. Gregg.

NEW ROUTE TO YELLOWSTONE PLANNED

Proposed Road to Shorten Trip to San Francisco by 650 Miles

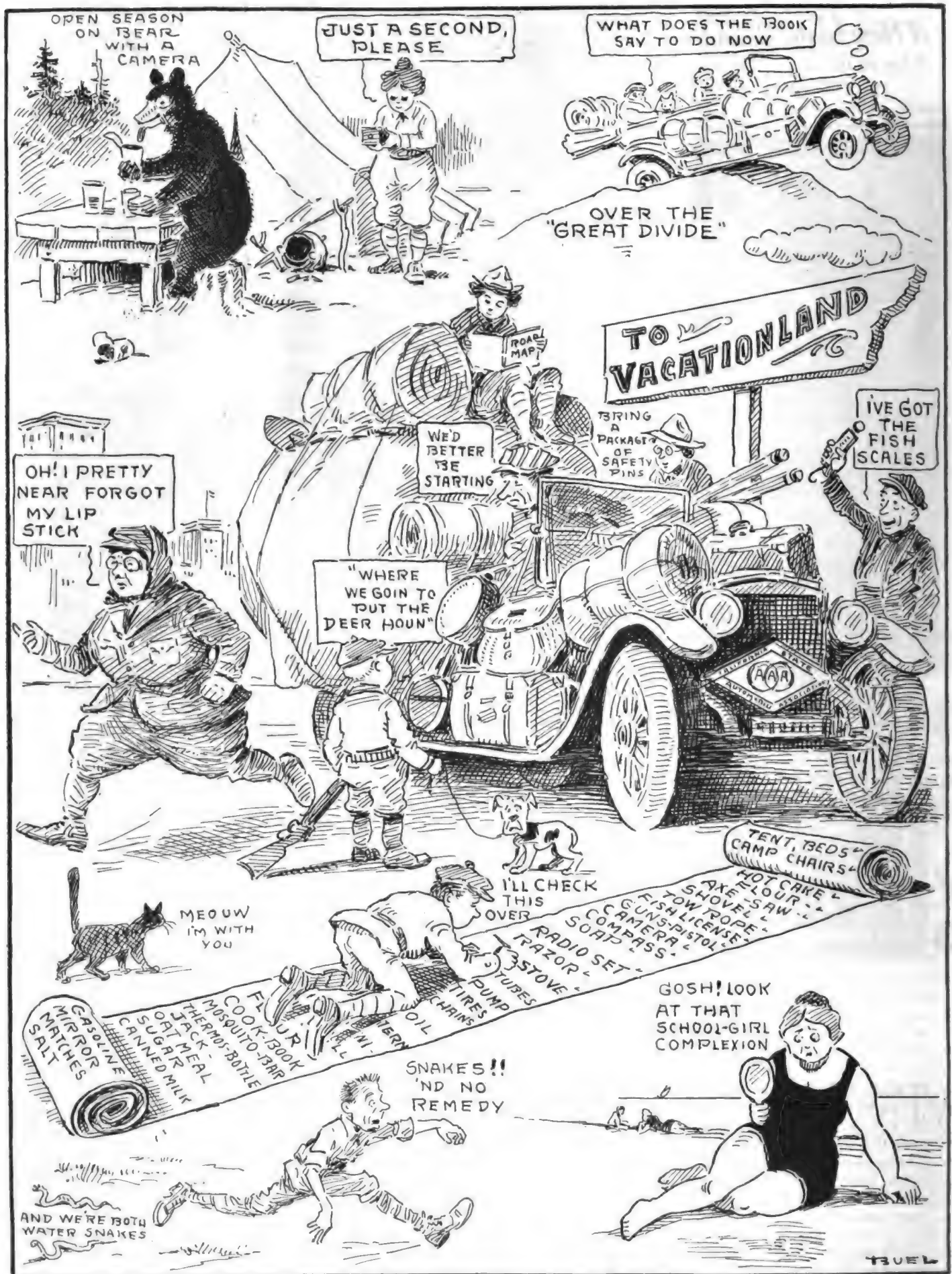
MANY a motorist has visited the world-renowned district of the Yellowstone. Yet few have experienced the delight of visiting, even afoot, one portion of this great national reservation which has yet to be made accessible to the motor car. But trails have been blazed into the midst of its wonders by scout parties sent out by the Idaho State Automobile Association. Yellowstone National Park joins the

State of Idaho on the east, and it is here that the means of approach into the virgin country of the park lies.

Under the plans for the new boulevard through Idaho to Yellowstone National Park, six hundred and fifty miles will be cut from the present touring distance between California and the National reservation. By using the Boise Valley-Winnemucca highway the distance to San Francisco is reduced by

five hundred miles, and the successful completion of the new road to the Idaho entrance of the park will cut off an additional one hundred and fifty. A cross-country run is being planned for the late summer months which will go from Winnemucca to McDermitt, Nevada, to Jordan Valley, Oregon; then Nampa, Mountain Home, Hailey, Arco, Dubois, and Ashton, Idaho.

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FISHING TIME

A Survey of California's Many Trout Streams

By J. S. HUNTER

Assistant Executive Officer, California Fish and Game Commission

DO YOU remember the thrill that was yours in your younger days when the frost was out of the ground and you knew that the fish would take the hook? You who were raised in the Middle West like the writer did not have the opportunity to cast for the highly colored trout, but you did have good sport yanking out the ugly catfish, and when fortune favored, and you were able to spend a few days where black bass lurked beneath the lily pods, you were loathe to believe that there was any better sport.

How well I remember a week spent on the Elkhorn in Northern Nebraska many years ago. The bass and pickerel did not condescend to take the frog although cast after cast was made right where they should have been. After working all day, in sheer disgust I tried for sunfish, beautifully colored fellows that would take the hook as fast as it hit the water—very good eating, too. Then on the last day a thunder storm that was a real storm came up. When the thunder was crashing the loudest, the lightning flashing the sharpest, the wind blowing the strongest and the rain pouring the hardest, the fish began to come. It did not last long, but still is a green island in pleasant recollections.

Nowadays it takes the rushing trout streams with the accompanying mountain scenery to bring the thrill, and instead of the old no-jointed bamboo pole we must have the graceful trout rod with all the trimmings, multiplying and anti-back-lashing reels, tapered lines, leaders, flies and in fact everything that the man behind the counter can induce us to take and our pocket-books will allow. Those of you who have been inoculated by the fishing bug know the thrill. Those whom the bug bit deeper are called cranks; others have a milder form, but as long as the germ is in the system, like malaria, it will out.

California Excels in Streams

California Fisherman: Do you know that in your State you have more miles of trout-streams and more square miles of trout-filled lakes than there are in any other State in the Union—and do you realize that your automobile puts all of those waters within your reach in a very short time? How different from the old days when you had to sit behind the old hay burners for hours to get anywhere! Even the Pescadero in San Mateo County was a long way from San Francisco. You are living in an age of privileges. Gasoline

may go up but even if it does it is cheaper and quicker than hay. How many times have you paused in the midst of your pleasures to give thanks to the kind fates that decreed that you should be a Californian either by birth or adoption? With the highest mountains and the lowest valleys California can duplicate conditions found in every other State in the Union and has many more that are altogether different. Stream conditions can be found that are adapted to every species of trout known. Peculiar conditions in various localities have developed different species of trout, so that we can boast of fourteen native species, and in addition others that have been brought from other parts of the world.

It is not the intention of the writer to direct the fisherman to any particular stream where trout are abundant, for you might go to the best places and have no success and you would say that I did not know what I was talking about. Success in fishing depends as much on the fisherman as on the fish. A poor fisherman may not catch fish even though the water is filled with them. On the other hand, a good fisherman will frequently take an excellent basket of fish from a stream that is reported to have been fished out. It is far best for the angler to find his own best place, for if he does he will take a deeper interest and will be more inclined to keep within the law and also see that the other fellow does. If everyone should go to the best places it would only be a short time until those places were fished out. The supply of fish is not inexhaustible. That is the reason for having small limits

Along the Coast Road

There are many directions for the fisherman to travel. Take the coast road up through Marin and Sonoma Counties. You will pass many famous streams, the Paper Mill, Salmon Creek, Russian River, the East and West Austin and Gualala—and in Mendocino County the Garcia, Noyos, Navarro, Ten Mile and numerous others. Remember that in this part of Mendocino County the season does not open until July 1st in order that the small fish may grow larger. The road up the coast is not as good as it might be, but the best fishing and scenery are not always on the good roads.

In the upper coast country by way of the Sonoma Valley can be reached the streams of Lake County, the Eel

River and its hundreds of tributaries. The Van Duezen is a Humboldt tributary and has produced many excellent fish. Do not forget that in the late summer and fall the lower Eel is the home of many steelhead trout fresh from the ocean and as game as any fish that swims. Still farther north are the Stone and Freshwater Lagoons, Mad River and Redwood Creek, all good fishing streams and well stocked with the Northern Cutthroat as well as Rainbow trout. Still farther north is the Klamath River, good all the way to the Oregon line—best in the fall of the year. At that time there are numerous ripples where you can hook a big fellow, pounds not inches, at every cast. The tributaries to the Klamath hold up well all summer although the fish may not take the fly in the main river.

The Monterey coast country is most interesting to the "Ike Waltons." Steep mountains "a mile high" slope abruptly to the ocean with swift cascades of cold crystal-clear water. Much of this country can only be reached by trail, but the Carmel, Arroyo Seco, San Antone and Nacimiento can all be reached by auto.

If you do not care to go so far, Santa Clara County has some excellent streams and the San Lorenzo in Santa Cruz County, while probably fished more than any other stream in the State, still furnishes many good fish, even when fishing has fallen off in other coast streams.

San Mateo Popular

In San Mateo County, although there are probably a hundred times the number of fishermen that there were a few years back, there are many streams that are not to be despised. When the grise are running in the Pescadero Lagoon in the late summer there is no need to go farther.

If the more rugged mountains appeal to you a few hours' drive will take you to the many branches of the Stanislaus, the Tuolumne, Mokelumne, American and still farther in the north the McCloud, the Pit, and in the extreme north the Klamath again. Toward the south lie the Merced, San Joaquin, Kings, Kaweah and the long-famous Kern with the Kern River Rainbow, the most beautiful of all the Golden trout.

There are actually thousands of streams and hundreds of lakes throughout the Sierras from western Siskiyou to the extreme south where the trout are waiting for you. As a rule the

best fishing is not where the most fisherman go but in the back country which can only be reached by roughing it. However, when you get there it is all worth while and afterwards you will always have the recollection of a most enjoyable outing. Some people believe that the only fish worth while are trout. For a change, try some of the other game fish; you will find them no less interesting. Striped bass are found in many places around the San Francisco Bay and up the river to above Sacramento. Surf fishing near San Francisco is frequently rewarded by twenty-pound stripers.

Black bass are abundant in the San Joaquin and Sacramento deltas as well as in many other parts of the State. They were brought into the State many years ago and have multiplied wonderfully. Clear Lake in Lake County is very well stocked and big fellows weighing upwards to ten pounds can frequently be reeled in. The Sacramento and the San Joaquin are also well stocked with Sacramento perch, a most excellent game fish, and also the iridescent sunfish, almost as good in the pan as a trout.

Salmon trolling off the heads and in Monterey Bay will not be so pleasant

if you are subject to mal de mer. You will probably wish that you were somewhere on good dry ground, but when you get a good-sized salmon on a light tackle you may even forget to be seasick.

Angling is one of the oldest and most honorable of sports. There are few places in the State where you will not be more than welcome if you come clean. The true sportsman is always considerate of the other fellow and respects his rights, so wherever you go be on your good behavior and you will be met with open arms when you return.

THE ROAD THAT'S A FRIEND TO MAN

Let me live in a house by the side of a road
Where the race of men go by—
But not such a road as I have now
With its dust when the season's dry.
Roads are good, they are bad, they are weak, they
are strong,
Built on many a diverse plan,
But I'd like to live by the side of a road
That is always a friend to man.

Let me live in a house by the side of a road
Where flows, like the rich, red blood,
A current of life, cars, flivvers and trucks,
Not a highway composed of mud.
Who would dwell in content by a rut-slashed track
Rock-strewn from Beersheba to Dan?
Let me live in a house by the side of a road
That is always a friend to man.

I can live only once, so why should I stay
Where daily offends my eye
A crooked streak of mud or clay,
Scooped out by the passers-by?
I don't like to sit in the scorner's pew,
Nor "hurl the cynic's ban,"
But ye gods!—for a road that all the year through
Can be counted a friend of man!

—Plateau (Colo.) Voice.





Off for the High Sierras. California State Automobile Association's fleet of sign posting trucks and cars leaving San Francisco to erect approximately 8,000 new yellow and blue road markers. There are now over 32,000 on the highways. One of the two Yosemite tour cars, giving free service to members, is shown in the center.

WITH THE ORGANIZED MOTORISTS

Progress Made in Campaign for Second Peninsula Road

The plan to build an additional highway down the peninsula and a bridge across the bay either at San Mateo or Dumbarton has engaged the attention of the various civic and commercial bodies of the San Francisco Bay region during the past month almost to the exclusion of everything else.

The endorsements that have been made of the propositions give an added impetus, and these together with the plans that are being worked out are bringing that much nearer reality the propositions that are so much needed in Northern California.

Every motorist who has had occasion to travel down the San Francisco peninsula knows the vital necessity of an additional highway there, but before this matter of a bridge across the lower bay was presented to the public, few had a conception of what it would mean to San Francisco, the San Joaquin and Sacramento valleys, or to Northern California for that matter.

With enlightenment now comes a wonder that this section has been able so long to do without these projects.

Immediately after the necessary resolutions were passed by the San Francisco and San Mateo Boards of Supervisors creating the Joint Highway District, Supervisors Richard Welsh of San Francisco and John McBain of San Mateo County, with some of their colleagues, had an interview with the State Highway Commission in Sacramento.

These officials found the Highway Commission in thorough sympathy with the projects and gained their assistance in the matter of making the necessary surveys and plans. It is reported that the Highway Commission will proceed at once to do this and that the necessary preliminary investigations will be completed before September. This gratifying news means that progress is being made.

Before this last week the matter of these improvements has been talked of chiefly on the San Francisco side of the bay and the attitude of those living in Alameda County and particularly in the vicinity of Niles and Hayward was not determined. May 13th a pilgrimage was made by the San Francisco and San Mateo enthusiasts into that territory and a meeting was held at Niles.

If, before that meeting, there was a suspicion of a doubt about the attitude there, it was so thoroughly removed that this whole territory can be counted upon as the biggest boosters of all. Representatives were present from Newark, Centerville, Niles, Pleasanton, Livermore, Hayward and

San Leandro and endorsement of the whole proposition was unanimous.

The result of this meeting will be the formation of a local improvement district in Alameda County, probably consisting of Murray, Pleasanton and Washington precincts, and the building of the necessary pavements from the eastern terminus of the bridge to connect with the State Highway passing through Hayward and Niles and the improvement of the highway from Niles to Livermore.

The communities that are affected by this improvement are united in demanding that it be made as rapidly as possible.

In order to avoid delays in financing the work and to see to it that at the eleventh hour nothing has been overlooked, those sponsoring the improvements have been giving considerable thought lately to the matter of financing the work.

The maximum tax that can be imposed under the Joint Highway District Act is five cents, and the budget is now being made. Just how much money will be needed or how it will be apportioned cannot be determined until the survey report is made by the California Highway Commission, which should be prior to September 1st of this year. It may be when this report is made a much lower tax than five cents will be found sufficient.

Pending the exact determination of the cost of the improvements and the amount of tax necessary, and to avoid delays until next year, the Board of Supervisors has been asked to anticipate the financing of these projects and to make the necessary provision in the budget of this year.

The California State Automobile Association was one of the first to endorse these propositions and it with other interested organizations has made its position clear to the Board of Supervisors.

Failure of the Supervisors now to recognize the vital necessity of this additional highway and bridge would be a serious blow to the motorists of Northern California and the future prosperity of that part of the State.

Results of May Meetings of C. S. A. A. Directors

The California State Automobile Association's free tow service to members into Yosemite Valley over the Chowchilla Mountain on the Wawona Road and on the Big Oak Flat grade is to be extended to the general public under certain conditions. This service is now being inaugurated.

The Board of Directors of the Association, at their

monthly meeting, decided that the California State Automobile Association tow cars should give free service not only to members of the California State Automobile Association but to the Auto Club of Southern California as well; that non-members residing within California should be required either to join the Club in whose territory they reside or pay a nominal charge for the service. Where the motorist declines to join the Association he will be given a receipt for the amount collected for the service which will apply on a membership in either organization, providing it is taken out within sixty days.

Fourteen civic organizations of Oakland filed a request with the board seeking equal recognition with San Francisco on the mileage signs of the California State Automobile Association between San Francisco and the southern boundary of Fresno County on the Valley Route. This request was referred to the Oakland Directors of the Association, President George S. Forderer and Secretary-Manager D. E. Watkins for recommendations.

At the instance of Director H. R. Basford the Association will request the various ferry companies on San Francisco Bay to collect tickets from motorists from the left-hand side of the vehicle rather than the right-hand side.

In the interest of safety Director W. S. Clayton of San Jose suggested that the Association mark with white lime, or other suitable substance, the outer edges of the paved highways on main routes where fog obscures the view of the road from motor cars. This suggestion was referred to the new Activities Committee for a report.

The Association will also investigate the feasibility of erecting signs at the entrances to various municipalities directing tourists through the towns and on to the main arteries leading out of same.

Secretary-Manager D. E. Watkins was instructed on the motion of Director Percy E. Towne to investigate the feasibility of incorporating the Club's emblem in a license-plate holder.

Present at the meeting were President George S. Forderer, San Francisco; Directors Percy E. Towne, San Francisco; W. S. Clayton, San Jose; H. J. Brunner, San Francisco; H. R. Basford, San Francisco; Frank B. McKeivitt, Sacramento; William T. Jeter, Santa Cruz; and Secretary-Manager D. E. Watkins, San Francisco.

Federal Road Appropriations in Tangle

The situation in Washington as regards the two Federal Highway Aid appropriation measures is such that there is little hope of getting either of them made into a law much before July 1st, if then.

The Dunn Bill passed the House some weeks ago by all but a unanimous vote, carrying an appropriation of \$140,000,000 for Federal Aid Roads and \$6,500,000 for Forest Road projects. That body also passed the Post Office appropriation measure.

When the Senate received the last measure it was passed, but with an amendment providing \$190,000,000 for Federal Aid Roads and \$15,000,000 for Forest prospects.

Aside from the difference in the amounts of money appropriated by each branch of Congress, the Dunn Bill carries a provision limiting Federal participation to \$12,500 per mile for the fiscal year 1923 and thereafter \$10,000 per mile. The present limitation of Federal participation is \$20,000 per mile.

This provision is particularly objectionable to the public land states where it costs as much, if not more, to build roads than elsewhere. These states have enjoyed the provisions of the so-called "graduated scale" enacted by the last Congress for a period of only six months and are just now putting into effect large road programs made possible by that act. The limitation provided for in the Dunn Bill

is a serious matter to all the western portion of the country and a concerted demand is being sent to Washington that it be defeated.

A conference committee was named some two weeks ago of which Senator Townsend of Michigan is the ranking member. The parliamentary situation is that Senator Townsend and his colleagues of the Senate can accept no amendment to the Senate Bill even though they wished, as that would be new legislation. The fact that the Senate appropriation is in the form of a rider to the Post Office appropriation bill prevents that and very fortunately too for the Western States.

The conferees appointed by the House are insistent on the limitation provision, but they can rescind from that attitude, allowing the appropriation to be made without the objectionable limitation provision. In the meantime there is a deadlock and a strong probability of having the whole subject injected in the midst of tariff and bonus discussions, which might mean its indefinite delay.

The Good Roads Bureau of the California State Automobile Association is actively insisting that something be done and is working in close co-operation with other agencies interested in Federal highway legislation beneficial to California and the West and particularly those measures carrying appropriations.

Of the \$340,000,000 heretofore appropriated by Congress for Federal Aid roads only about \$60,000,000 will remain available after the first of July and it is vitally necessary that additional appropriations be made now, otherwise there will not be enough to run another year, and the several states will of necessity have to curtail their road programs.

The matter is of particular interest to California because the Forest moneys have long ago been allotted and there is an insistent demand for more. In fact, the local Forest Service has requests for more than \$20,000,000 worth of needed highway improvement, and the most there can be hoped for under either of the bills now before Congress will be \$2,145,000.

Pittsburg Highway Tests to Be Resumed

There is to be a resumption of the highway tests at Pittsburg, California.

It will be remembered that these tests were inaugurated late last season by the Columbia Steel Company, which in co-operation with other firms and organizations constructed a concrete track about one quarter mile in length and composed of thirteen types of cement concrete roadways. These sections varied in thickness from five inches to eight inches and most of them were reinforced with steel.

Traffic was started on November 9th last, using for that purpose large army trucks loaded with pig iron. After 3,668,100 tons, being the equivalent of about ten years of normal state highway traffic, had passed over the test highway, certain of the lighter sections became so badly demolished that it was difficult to keep the traffic going. Some maintenance was done but that was very unsatisfactory.

Some very valuable information was obtained before the tests were finally stopped at the end of January. At that time the Good Roads Bureau of the California State Automobile Association pointed out that the tests had shown more forcibly than ever the need of further investigations, and the announcement now by the State Highway Commission that the tests are to be resumed is gratifying.

State Highway Engineer A. B. Fletcher has written the Good Roads Bureau that the original tests will be completed and that a series of new tests will be started. The tests will now be carried on under a co-operative agreement between the U. S. Bureau of Public Roads and the State Highway Commission.

The track has been repaired recently by patching the

(Continued on page 48)



College Yells

THE JUNIOR MECHANICS
One-a-lung, two-a-lung,
Three and four and phizz!
Give my mammy ether,
Daddy's bought a Liz!

THE SPEEDY SOPHS
Give 'er gas an' watch 'er go!
Up an' at 'em! Here's the dough!
Hear her snort an' rear an' boil!
See 'er sniff it! Castor Oil!

* * *

CHAUNCEY—Hi s'ye, hold topper! Wot's the bloomin' name huv your brother's hautomobile?

PERCY—Bly'me hif hi know, hold chap! W'en 'e buys hit, 'e calls hit Helizabeth; w'en 'e oranks hit, 'e calls hit Heliza; w'en 'e drives hit, 'e calls hit Liz; hand w'en hit stops 'e shouts "Ho Hel."

* * *

When the Motor's Purring

There's something in a motor car, its purring soothing song, that keeps my face a-smiling though all the world go wrong! I worship every cylinder that throbs with latent power when business cares are troublesome and clouds of worry lower. I've nursed it through the rattles; I've dosed it up with grease; I've cured it of a whooping cough that never seemed to cease.

She's ploughed through mud and gravel; she's wallowed in the sand; she's waltzed o'er hill and valley in this far western land. She washes clothes for mother, she husks the corn for dad, she pumps the water for the stock and cuts the wood for Tad. You turn the hose upon her, she blossoms like the rose, you step upon the throttle and Thunder! how she goes!

We pile in Nell and Sadie, and Jack and Mary Ann, and Pa and Ma and Sallie, and Bill, the hired man. Then out we go a-sailing, along the open road, with every spring a-groaning with all the family load.

We journeyed up to Shasta and down to Mexico; we drove into Yosemite and still the bus'll go! Now, stranger, let me give you the straightest kind of dope—a motor car's no angel nor yet an antelope, but let me tell you, stranger, there ain't no Near or Far if you're the proud young owner of a modern motor car!

Ask the Man Who Owns One

Most Motorists are bloomin' fools,
They trifle with the traffic rules,
I don't—
No man should try to get the drop
On any seasoned traffic cop,
Nor fail to heed his sign to stop,
I don't.

A man should never drive too fast,
Or brag about the cars he's passed,
I don't—
For "Safety First" should be his creed,
There really isn't any need
To drive a car at reckless speed,
I don't.

He should not scare equestrians,
Nor chase the poor pedestrians,
I don't.
In fact, I have no car to run,
I'm shy the coin to purchase one,
You'd think I wouldn't have much fun—
I DON'T!

—Motor Life.

* * *

Familiar Quotations

When the bus from ole Lunnion town broke down and the poet Tennyson had to walk home in the rain: "O that my tongue could utter the thoughts that arise in me!"

* * *

When Old Man Shakespeare's flivver developed a carbon tap: "Wake heaven with thy knocking; I would thou couldst."

* * *

Heard at Old Omar's secondhand car market: "Ah, take the cash and let the credit go nor heed the rumble."

* * *

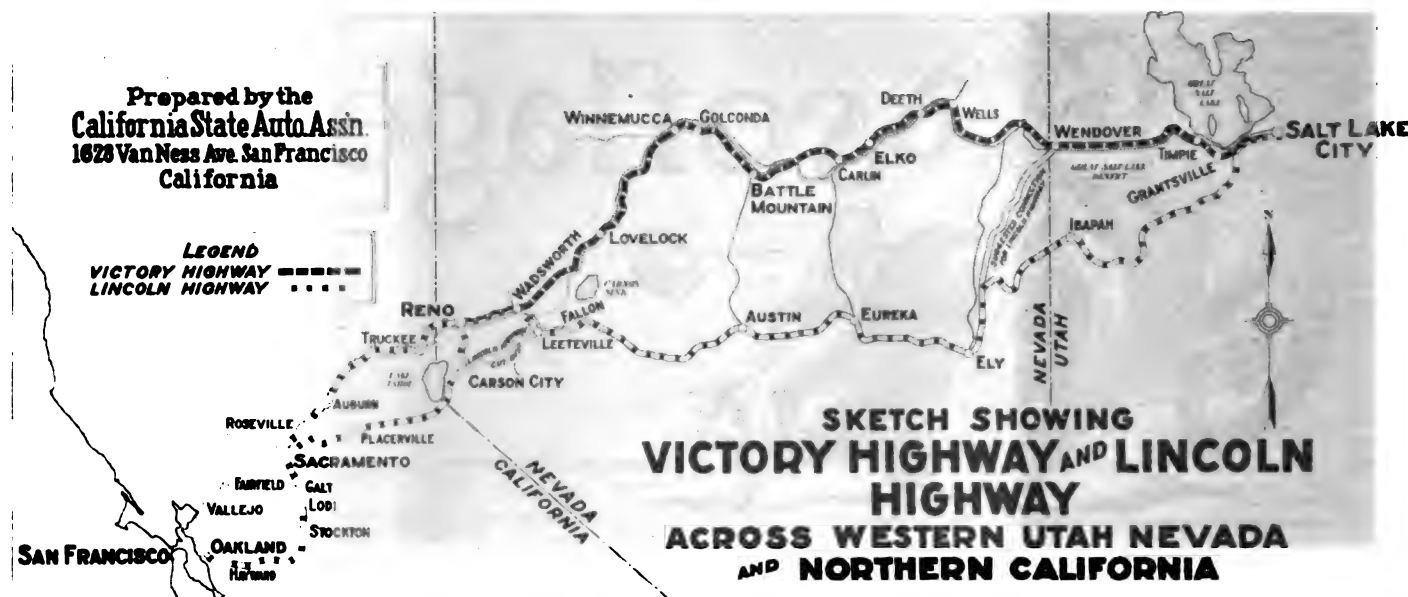
In Longfellow's garage one reads the motto: "Art is long and Time is Fleeting."

* * *

If ether is a good material for jazzing up the gas tank, why can't someone discover a method of putting these ether waves we hear of to some legitimate use?

* * *

Our next war will probably be between the "Fours" and the "Sixes," and, in that case somebody will probably up and shoot a "seven"!



THE LINCOLN-VICTORY HIGHWAY CONTROVERSY

Mountains Made from Molehills in Bickering Between Factions

By C. C. COTTRELL

Manager Good Roads Bureau, California State Automobile Association

SO VERY much has been said and written of the highway situation between Salt Lake City and San Francisco, particularly of the relative merits of the two roads crossing western Utah and northern Nevada, that another small contribution to the subject, especially if it might clarify the atmosphere, would not be untimely.

From the beginning of 1918 to the end of 1921 the writer was State Highway Engineer of Nevada, and if any one exists who should be familiar with the situation, it is the one who for any length of time has occupied that position.

The great trouble with most that has been said and written of this situation and supposed controversy is that it is little better than trash. Those familiar with but a few of the facts speak as authorities on the entire subject. Men who are unable to view this or any other subject intelligently or with an unbiased mind have submitted to those seeking knowledge very convincing and plausible statements.

Public Bewildered

The public has been bewildered and it is doubtful that it even now knows as much of the true situation as it would have learned by merely glancing at a map.

This making of a mountain out of a molehill and the creation of a controversy where none should exist is very bad business for everyone, and especially is it damaging to those trying to do something in a constructive way.

The effect of all this turmoil of the past has been to divide states into

sections to the extent that each looked with suspicion upon the other, and there has been a lack of united support on vital questions affecting the whole community. Friends have been made into enemies and even now one can go into certain communities and secure a fight at the drop of a hat.

No less a person than J. M. Leonard, the chairman of the Board of Directors of the Nevada State Highway Department, is authority for the statement that unless this quibbling and controversy stops, the highway programs of the two states to the east of California will receive a severe setback.

Programs Tied Up

It has been estimated, and it is the truth, that even now, because of this very thing, the programs of certain sections are completely tied up.

There is nothing about conditions in these two states of Utah and Nevada that warrants any controversy and particularly does this apply to people living elsewhere.

The accompanying map shows the two main highways westward from Salt Lake City into northern California. The Victory Highway, sometimes called the "northern route," has not been designated in California, while the Lincoln Highway Association has placed its name on both roads.

The history of all this controversy dates back to a time several years ago when the people of northern California awoke to the fact that they were not getting as much of the Eastern tourist traffic as they thought they were entitled to. In fact, only last year, of

the 30,000 tourists reaching Salt Lake City on their way westward, but 6,000 came to northern California in spite of a majority designating a preference for that territory. The first and only reason they could find was the condition of the roads across western Utah and northern Nevada, so ever since there has been a desire for better road conditions in those areas.

The Two Routes

Now of the two roads, the Lincoln and Victory highways, the truth of the matter is that they were then in as equally a poor condition as they are now in the same fairly good condition. The distance by both routes is almost identically the same.

In an over-zealous attempt to urge the improvement of travel conditions into northern California, a mistake was made in trying to choose one road for improvement and upon which the support of outside agencies might be concentrated.

So far as the State of Nevada is concerned, this was particularly unfortunate. In that state the Lincoln and Victory highways serve entirely two different communities and both will eventually be built. The funds for each road are raised in their respective territories and there is no other thought in the minds of the state highway officials than to speed up the work on both roads as rapidly as possible.

Both roads will be built together, the manner of raising finances there requires it, and the demand of two separate communities is always present. Then why all this controversy?

The Lincoln Highway Association donated \$120,000 of real money to the State of Nevada to aid in improving that road and this has been quite a factor in hurrying the work along on that route. The Utah-Nevada-California Highway Association is now raising a fund of \$150,000 with which to assist in building the Victory Highway in Nevada. Any attempts of the advocates of the other road to discourage this effort should be viewed as discreditable to those people.

The State of Nevada is not asking this assistance—the people there will build both roads, but contributions such as the above will tend to speed up the work.

Federal Aid Act

When the new Federal Aid Act went into effect last November it became necessary for Nevada and the other states to designate certain roads as primary, and others as secondary. The State Highway Department named the Victory Highway as a primary road and the Lincoln as a secondary.

The situation in California has not been a matter of controversy, to any great extent, at least. Both the Auburn and Placerville roads were named as a part of the 7 per cent system—the former being designated as primary.

In Utah, on the other hand, we have the seat of the most recent disturbances.

Both the highways there pass through very desolate territory and both can be built. There are no unusual or unique methods needed. Anyone who says that either of them cannot be built does not know what he is talking about. That person is either misinformed or conveys the information for selfish purposes.

The State Road Commission of Utah appreciates as much as anyone the necessity of making adequate connections with both highways. They now know how to do it with the Nevada section of the Victory Highway and have designated the Wendover Road as the primary road, but they have taken no action with respect to the Lincoln Highway, so that road from Salt Lake City westward to the Utah-Nevada state line remains undesignated.

The business men of Salt Lake City and the State Road Commission have repeatedly stated that they will provide Ely with a connection, but they are not satisfied yet that the present location of the Lincoln Highway is the most feasible.

Highway Still Incomplete

It is true that some money has been spent on that road and that considerable financial assistance was given by the Lincoln Highway Association, but the road is far from a completed highway and if any change in location is to be made by the State Road Commission of Utah it should be done now before more money is spent.

The business men of Salt Lake City have consistently asked the question—Why build two roads west of Salt Lake City when one will serve the purpose? They have been considering the practicability of the connection from Wendover to Ely, shown on the accompanying map.

Now the distance from Salt Lake City to Ely, Nevada, by the present Lincoln Highway location is 259 miles, according to the Utah Automobile Association, and they also say the distance to Wendover is 132 miles. The Good Roads Bureau of the Cali-

fornia State Automobile Association has recently caused an investigation to be made of the route from Wendover to Ely, and finds that distance to be 132.5 miles, making a total of 264.5 miles from Salt Lake City to Ely by the Wendover route.

The designation of this road as the Lincoln Highway connection would relieve the State of Utah of about 110 miles of highway construction and would add something less than one-half that amount to the State of Nevada. The relative merits of the two roads are not known at the present time.

Attack and Counter-Attack

The newspapers of Utah have been full of attacks and counter-attacks and some of this has drifted over into California. In most cases what has been published amounts to nothing except to make a wider breach between those who should be working together for the common purpose of going forward. Lack of definite knowledge by most of those contributing to this controversy in Utah makes the matter all the worse and the public is becoming sick of it all.

Investigations are being made of the different routes by the engineers of the United States Bureau of Public Roads, the State Road Commission of Utah and the Highway Department of Nevada. Out of these investigations will come some concrete knowledge of what to do and, until then at least, a halt should be made.

We here in the West have too many difficult highway problems to work out—too much that needs whole-hearted co-operation on the part of all—to allow such matters as these to take any big part of our attention and destroy confidence.

THE LURE OF THE HIGH SIERRAS

Gigantic Redwood Groves and Majestic Waterfalls Attract Thousands of Tourists Yearly

THE highways into the Sierras, into the sublime regions of California's national parks are now open. Yosemite opened its season of touring early in May as did General Grant and Sequoia National Park. The route to Tahoe is now open to motor cars, as is the highway into that weird region of natural wonders, the Lassen Volcanic National Park. Motor traffic this year will be greater than ever before; highways will be in better shape to bear up under the strain and stress and accommodations in the various resorts will be more adequate. This is the announcement forthcoming

from the various centers of touring interest in the high Sierras.

If a tourist were asked what two elements in the landscapes of California made the greatest impression upon him, he probably would reply: "The gigantic redwoods and the majestic waterfalls." For the western world was long looked on as a land of trackless forests and of enchanted springs and falls and these two scenic delights are peculiar to California.

Motorists who visit the Yosemite by way of the Big Oak Flat road pass through the Tuolumne grove of Big Trees on the dividing line between

the Tuolumne and the Merced rivers. On the Raymond route to Fresno and Los Angeles the Mariposa and Fresno groves may be visited, and on the Coulterville route is located the Big Tree grove of the Merced. But the Sequoia Gigantea in all its glory is to be found in the forests of Sequoia and General Grant National Park, on the Kaweah and the Tule Rivers.

The Famous Big Tree

The most famous of the Big Tree family, the Sequoia Gigantea, is found from the famous grove of Calaveras to Deer Creek and the Kern River, over a

distance of two hundred miles in the higher peaks of the Sierras. They are found at an elevation of from five thousand to eight thousand feet above sea level. Between the Calaveras and the Tuolumne groves there is a gap of forty miles and another gap of the same sort between Fresno and the Kings River. The Sequoia National Park and the General Grant National Park groves cover a space from three to eight miles wide and seventy miles in length.

The southern grove sees the red-woods perhaps as firmly entrenched in their habitat as any specimen of tree of which we know. They are to be found growing in a healthy manner among the rocks, along the banks of streams with thousands of small trees to take the place of the ancient groves when time shall finally bring them again into the lap of Mother Earth.

The sequoia is of dense foliage and its smooth surface makes it easily recognizable. The most ancient and the largest of the specimens of the southern groves have been called by John Muir "the very gods of the forests." The so-called full-grown specimens of the sequoia run from fifteen to twenty feet in diameter and some two hundred and fifty feet in height. Specimens twenty-five feet in diameter are common and they even reach thirty feet and more. Many of the ancient trees have lived some three thousand years and their yellowish-green foliage and their straight trunks of red-brown make them one of the most beautiful objects in nature.

The grove of Calaveras was the first of the Big Tree groves to be discovered and this is the northernmost of them all. It may be visited from Murphy's in the heart of the country famous in the days of gold. The flowery leafiness of the grove is its main characteristic. The great groves of the high Sierra region differ greatly from the big trees of the Coast. The different atmosphere may have something to do with it. At any rate, they seem a distinct species from the big trees of the Santa Cruz district and the towering majesty of the Humboldt forests.

The Yosemite Falls

The Yosemite Falls, the most remarkable of all the wonders of this remarkable canyon, is perhaps the noblest waterfall in all the world. "When it first comes to sight," wrote John Muir, "it seems almost within reach of one's hand, so great is its volume and velocity, yet it is still a third of a mile away and appears to recede as we advance.

"The sculpture of the walls about it is on a scale of grandeur, according nobly with the fall, plain and massive, though elaborately finished, like all the other cliffs about the valley.

"In the afternoon an immense shadow is cast athwart the plateau in front of the fall, and far over the fields of chaparral that clothe the slopes and benches of the wall to the eastward, creeping upward upon the fall until it is wholly overcast, the contrast between the shaded and illuminated sections being very striking in near views.

"Under this shadow, during the cool centuries immediately following the breaking up of the Glacial Period, dwelt a small residual glacier, one of the few that lingered on this sun-beaten side of the valley after the main trunk glacier had vanished. It sent down a long winding current through the narrow canyon on the west side of the fall, and must have formed a striking feature of the ancient scenery of the valley; the lofty fall of ice and fall of water side by side, yet separate and distinct.

"The coolness of the afternoon shadow and the abundant dewy moisture from the spray of the fall make a fine climate for ferns and grasses on the plateau, and for the beautiful azalia, which grows here in profusion and blooms in September, long after the warmer thickets down the valley have withered and gone to seed. Even close to the fall, and behind it at the base of the cliff, a few venturesome plants may be found, undisturbed by the rock-shaking torrent.

"The basin at the foot of the fall into which the current directly pours when it is not swayed by the wind is about ten feet deep, and fifteen to twenty feet in diameter. That it is not much deeper is surprising, when the great height and force of the fall is considered. But the rock where the water strikes probably suffers much less erosion than it would were the descent less than half as great, since the current is outspread, and much of its force is spent ere it reaches the bottom; being received on the air as upon an elastic cushion, and borne outward and dissipated over a surface more than fifty yards wide.

"This surface, easily examined when the water is low, is intensely clean and fresh-looking. It is the raw, quick flesh of the mountain wholly untouched by the weather. In summer droughts, when the snow-fall of the preceding winter has been light, the fall is reduced to a mere shower of separate drops without any obscuring spray. Then we may safely go back of the fall and view the crystal shower from beneath, which, when the sun is shining, is extremely beautiful, each drop wavering and pulsing as it makes its way through the air, and flashing off jets of colored light of ravishing beauty. But all this is invisible from the bottom of the valley, like a thousand other interesting things. One must labor for

beauty as for bread here as elsewhere.

"During the time of spring floods the best near view of the fall is obtained from a ledge on the east side above the blinding spray, at a height of about 400 feet from the base of the fall. A climb of about 1,400 feet from the valley has to be made, and there is no trail, but to any one fond of climbing, and who is at all stirred by a love of adventure, this will make the ascent all the more delightful. The ledge runs out back of the fall on the sheer front of the cliff, so that the fall may be approached as closely as we wish. When the afternoon sunshine is streaming through the thronging masses of down-rushing waters the marvelous firmness and variety of their forms are beautifully revealed. The whole fall is a majestic column of foaming, snowy water, ever wasting, ever renewed. At the top it seems to burst forth from some grand, throbbing heart of the mountain in irregular pulses, comet-like spurts succeeding one another in sublime rhythm. Now and then one mighty throb sends forth a mass into the free air far beyond the others, which rushes alone to the bottom of the fall with long, streaming tail-like, combed silk, illumined by the sun, while the others, descending in clusters, gradually mingle and lose their identity. They rush past with amazing velocity and display of power, though apparently drowsy and deliberate in their movements when observed from the bottom of the valley at a distance of a mile or two. The heads of these comet-like masses are composed of nearly solid water, and are dense white in color, like pressed snow, from the friction they suffer in rushing through the air, the portion worn off forming the tail, between the white lustrous threads and films of which faint, grayish pencilings appear, while the outer, finer sprays of waste water-dust, whirling in sunny eddies, are pearl gray throughout."

Little Distinction of Form

"At the bottom of the fall there is but little distinction of form visible. It is mostly a driving, boiling, upswirling mass of scud and spray, through which the light sifts in gray and purple tones, while at times, when the sun strikes at the required angle, the whole is changed to brilliant rainbow hues. The middle portion of the fall is the most openly beautiful; lower, the various forms into which the waters are wrought are more closely and voluminously veiled, while higher, toward the head, the current is more simple and compact. But even at the bottom, in the boiling clouds of spray, there is no confusion, while the rainbow light makes all divine, adding glorious beauty and peace to glorious power. The Upper Yosemite Fall has far the



Vacations

In Our Own Home Land

The Switzerland of America

Soon the open road will call you; the majestic scenery of the Pacific Northwest will appeal to you; its trout streams to be found every few miles along the road; the thirty-eight golf courses; sea beaches; national parks and forest reserves lure you to

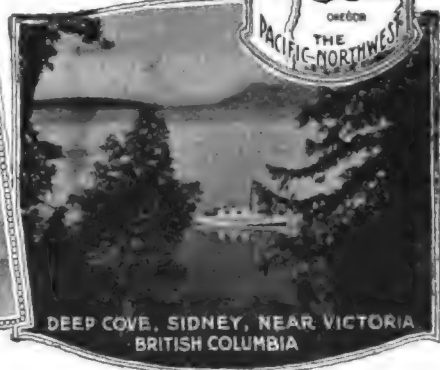
*Enjoy Your Favorite Sport in the Finest
Summer Climate on the Continent*

Bright, cool days with a sound, restful sleep every night, in the

*Great International Pacific Northwest
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The finest summer playground in America is at your doors. You may start any day and drive all the way. The longest, best paved and most scenic continuous highway in the United States. There is no other such drive. There are excellent hotels at very reasonable rates, the same in the tourist season as at any other time, and camping grounds everywhere. If you wish further information

Write to the Pacific Northwest Tourist Association, maintained by Government funds to give free information, Herbert Cuthbert, Executive Secretary, L. C. Smith Building, Seattle, Washington.



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richest, as well as the most powerful, voice of all the falls of the valley, its tones varying from the sharp hiss and rustle of the wind in the glossy leaves of the live-oaks and the soft, sifting hushing tones of the pines, to the loudest rush and roar of storm-winds and thunder among the crags of the summit peaks. The low bass, booming, reverberating tones, heard under favorable circumstances five or six miles away, are formed by the dashing and exploding of heavy masses of water and air upon two projecting ledges on the face of the cliff, 400 and 600 feet above the base of the fall. The torrent of massive comets, is continuous at time of high water, while the explosive, booming notes are wildly intermittent, because, unless influenced by the wind most of the heavier masses shoot out from the face of the precipice and pass the ledges upon which at other times they are wrecked. Occasionally the whole fall is swayed away from the front of the cliff, then suddenly clashed flat against it, or vibrated from side to side like a pendulum, giving rise to endless variety of forms and sounds.

"Once during a violent wind-storm, while I watched the fall from the shelter of a pine-tree, the whole ponderous column was suddenly arrested in its descent at a point about midway between the base and top, and was neither blown upward or turned aside, but simply held stationary in mid-air, as if gravitation below that point had ceased to act. Thus it remained for more than a minute, resting in the arms of the storm-wind, the usual quantity of water meanwhile coming over the brow of the cliff and accumulating in the air as if falling upon an invisible floor, swedging and widening. Then, as if commanded to go on, scores of arrowy water-comets shot forth from the base of the suspended fountain, and the grand anthem of the fall once more began to sound. After bathing so long in the spray of the fall it is natural to look above and beyond it and say: 'Where does all this chanting water come from?' This is easily learned by going and seeing.

Source of the Falls

"The Yosemite Creek is the most tranquil of all the larger streams that pour over the valley walls. The others, while yet a good way back from the verge of the valley, abound in loud-voiced falls and cascades or rushing rapids, but Yosemite Creek, as if husbanding its resources, after the descent of its main tributaries from the snowy heights of the Hoffman Range, flows quietly on through strips of level meadow and smooth hollows and flats, with only a few small cascades, showing nothing in all its course to suggest the

grandeur of its unrivalled falls in the valley.

"Its wide and shallow basin is so crowded with domes it seems paved with them. Some castellated piles adorn its western rim, while the great Tuolumne Canyon sweeps past it on the north, and the cool, shadow-covered precipices of the Hoffman Range bound it on the east and northeast. During winter and spring most of the waters of the basin are derived directly from the snow, but in summer only two or three and in the drier seasons only one of its many streams draws its source from perennial fountains of snow and ice. Then the main dependence of the many tributaries are moraines of the ancient glaciers, in which a part of the melting snows and rains are absorbed.

"Issuing from their moraine fountains, each shining thread of water at once begins to sing, running gladly onward, over boulders, over rock-stairs, over dams of fallen trees; now groping in shadows, now gliding free in the light on glacier-planed pavements, not a leaf on their borders; diving under willows, fingering their red roots and low-dipping branches, then absorbed in green bogs; out again among mosaics of leaf, shadows and light, whirling in pools giddy and ruffled, then restful and calm, not a foambell in sight; whispering low, solemn in gestures as full grown rivers, slowly meandering through green velvet meadows, banks embossed with bryanthus and yet finer cassiope, white and blue violets blending with white and blue daisies in smooth, silky sods of the Alpine agrostis; out again on bare granite, flowing over gravel and sand mixed with mica and garnets and white crystal quartz, making tiny falls and cascades in rapid succession, until at length all the bright, rejoicing choir meet together to form the main stream which flows calmly down to its fate in the valley, sweeping over the tremendous verge beneath a mantle of diamond spray. Amid the varied foams and fine ground mists of the mountain streams that are ever rising from a thousand waterfalls, there is an affluence and variety of rainbows scarce at all known to the careworn visitor from the lowlands. Both day and night, winter and summer, this divine light may be seen wherever water is falling in spray and foam, a silent interpreter of the heart-peace of Nature, amid the wildest displays of her power. In the bright spring mornings the black-walled recess at the foot of the Lower Yosemite Fall is lavishly filled with irised spray, which does not simply span the dashing foam, but the foam itself, the whole mass of it, seems to be colored, and drifts and wavers, mingling with the foliage of

the adjacent trees, without suggesting any relationship to the ordinary rainbow. This is perhaps the largest and most reservoir-like accumulation of iris color to be found in the valley.

Lunar Rainbows

"The lunar rainbows, or spraybows, are grandly developed in the spray of the Upper Fall. Their colors are as distinct as those of the sun, and as regularly and obviously banded, though less vivid. They may be seen any night when there is plenty of moonlight and spray.

"Even the secondary bow is at times distinctly visible. The best point from which to observe them is on the upper ledge, 400 feet above the base of the fall on the east side. For some time after moonrise the arc is about 400 to 500 feet span, set upright, one end planted in the spray at the bottom, the other in the edge of the fall, creeping lower, of course, and becoming less upright as the moon rises higher. This grand arc of color, glowing with such invincible peacefulness and mild shapely beauty in so weird and dark a chamber of shadows, and amid the rush and roar and tumultuous dashing of this thunder-voiced fall, is one of the most impressive sights offered in all this wonder-filled valley.

"Smaller bows may be seen in the gorge on the plateau between the upper and lower falls. Once toward midnight, after spending a few hours with the wild beauty of the upper fall, I sauntered along the edge of the gorge, looking in here and there, wherever the footing felt safe, to see what I could learn of the night aspects of the smaller falls that dwell there. And down in an exceedingly black, pit-like portion of the gorge, at the foot of the highest of the intermediate falls, while the moonbeams were pouring into it through a narrow opening, I saw a well-defined spraybow, beautifully distinct in colors, spanning across from side to side of the pit.

"In the pool at the foot of the fall pure white foam waves were constantly springing up into the moonshine, beneath the beautiful bow, like a band of dancing ghosts.

"The leaping waves so foamy white, amid rocks and shadows so weird and black, and the mystic circle of colored light, made a scene in the general gloom of the night marvelously vivid and wild. Another marvelous night scene, but not a safe one is a view of the full moon through the edge of the Upper Fall, from the narrow ledge that extends back of it, 400 feet above its base. But the ledge is less than a foot wide on the face of the wall at one

(Continued on page 41)

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HOW DO YOU TREAT YOUR MOTOR CAR?

Why Not a Society for the Prevention of Cruelty to Automobiles?

"It's a funny thing," remarked Jim Davis, "the way good people treat their automobiles. When they had horses they were kind and considerate of them, fed them regularly with the best of food and groomed them carefully, but their automobiles rarely receive such kind treatment." Jim was the leading garageman of Greenville. Before the days of the automobile he had maintained a livery stable. Consequently he was particularly competent to observe the difference in the care bestowed by the average inhabitant on his automobile as compared to the attention their horses had received back in the day preceding the automobile.

"There's old John Barnard, for example. Twelve years ago he owned three or four of the best horses in the county, and they were given the very best of care. He was not only particular about who drove them and the way that they were driven but he gave the most scrupulous attention to their feeding. Their rations were scientifically proportioned and the animals were fed at exactly the same time every day. The stable was comfortable, well ventilated in summer and warm in winter. His carriages were also kept in good shape. They were washed frequently and lubricated as required.

Horses Discarded

"Finally the horses were discarded in favor of the more rapid, more modern conveyance, the automobile. He has had a new car every two years, and the one that he has now looks double its age of a year and six months. The car is washed grudgingly about once in six months and lubricated sparingly now and then. I don't believe that the engine oil has ever been changed, and am quite sure that the oil reservoir has not been real full since the day that the car was delivered. Old John was one of the most considerate, most sympathetic owners of horse flesh in this vicinity. He was continually thinking of how the horse felt about it. When driving on a hot day he saw to it that the animal did not overexert himself. The check reins were never too tight, the whip was sparingly used, and the horses were provided with fly nets in summer and were always carefully blanketed when standing in cold weather. He considered that kindness to dumb animals was a duty that should neither be shirked nor evaded. When a horse was uncomfortable or suffering he had no means of conveying his feelings to his master and consequently it was up to the master to

recognize his difficulties, and further, to foresee and forestall them as far as possible.

"But Old John has never been able to realize that an automobile, after all, has many points in common with a horse, and requires just as careful treatment. He will drive for miles with little or no water in the radiator, or run the car until the oil supply gets so low that he is forced to get more oil through sheer loss of power. If John were a fast driver he would burn his bearings out quite frequently, but he travels around at such a moderate pace that lack of oil is noted by considerable falling off in power. Of course, this loss of power means that dry pistons are rubbing over dry cylinder walls, that crankshaft and camshaft are rotating in bearings having the flimsiest of oil films, and every time the crankshaft or camshaft breaks through the film bearing wear occurs. The result is that his car is worn more after two years than the average car is in five years.

An Extreme Case

"Old John, in one respect, is an extreme case. Few motorists treat their machines quite as badly as he does his, but on the other hand, few motorists who formerly had horses treated their animals as considerately as he did his.

"Sympathy with horse flesh is an inbred feeling that has grown up through many generations, but it is astonishing how few people have any feeling at all for fine machinery. A lawn mower or a sewing machine may be neglected almost with impunity because the stresses in these machines are not great, but an automobile is a different problem. It must be properly treated.

"The younger generation is just as callous in handling fine machinery as the preceding. Young George Phelps is a graduate mechanical engineer. He went through one of the best universities in the country and made a splendid record as a student, but he is absolutely devoid of feeling for machinery. He drove into my shop one day with a loose connecting rod that knocked so loudly that you could hear it a mile away. How that rod ever held until he got to my shop was a mystery. By all odds it should have broken through the crankcase a long time before. As it was, the crankshaft was badly bent and had to be removed and straightened, and new bearings installed throughout. The pistons, too, were somewhat scored, although not enough to warrant their removal. In coming ten miles that engine had aged more than in 10,000 miles of ordinary running. As soon as

the engine started to knock, it should have been shut off and the car towed in. It was downright cruelty to drive the engine another revolution. If he had possessed even the slightest feeling of sympathy for fine machinery, he never would have been able to stand the continual hammer, hammer, hammer, during those ten long miles. But having no feeling, he made the trip with perfect equanimity, and a nearly ruined engine was the result.

A New "S. P. C. A."

"There never will be a Society for the Prevention of Cruelty to Automobiles, but the mere suggestion of such an organization illustrates quite forcibly the fact that automobiles are even more likely to be maltreated than dumb animals.

"There was a fellow in here the other day claiming that his generator was out of order, and that his battery was low. I looked at the battery and found that the cells were almost dry. Later he admitted that they had not been watered in weeks, and that this neglect was nothing more or less than carelessness. The battery was quite beyond repair and he had to buy a new one. Old horse owners thought it no hardship to water their animals regularly every day, but neither they nor their sons seem to be able to add a small quantity of distilled water to the battery cells once every two or three weeks.

"Yesterday morning I mounted a new tire and tube for a man who has been driving automobiles for several years. In the afternoon he was unfortunate enough to run a 3-inch spike through it, about a mile out of town. He had no spare and so he drove in with the tire flat. By the time he got here the tube and flap had been ripped to shreds and the side walls of the tire on the inside was cracked so badly that there was nothing to do but throw it away. I had tried to sell him a spare that morning but he didn't seem to want it.

The Tire Question

"Speaking of tires, last week three different motorists around the town came in with shoes that had been ruined by driving without sufficient air. Two of these men run habitually without enough air, although almost every time I see them I try to get them to be more careful. The third tire, I believe, was ruined because the driver failed to walk around his car and inspect the inflation of his tires before starting out in the morning. I



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believe that he picked up a nail just before entering the garage the night before, and that this caused a slow leak so that by morning the tire did not have more than fifteen or twenty pounds of air in it.

"There isn't a man in town who would drive a lame horse a mile if there was any possible way of avoiding it, yet not so long ago the son of one of our leading citizens drove his car some forty miles on three cylinders. I estimate that his engine made nearly two hundred thousand revolutions during that journey, and at least once every revolution that limping engine gave the driving mechanism a jolt. This blow was felt by the crankshaft, clutch, transmission, universals, bevel pinion and gear, axles shafts, wheels and tires, and the bearings supporting these various parts. One-fifth of a million times all these parts were unnecessarily wracked and twisted.

Weak Rear Ends

"There are two or three makes of cars around town which are reputed to have weak rear ends, and there is no mistake about it, they are continually

giving trouble; but the real difficulty with these particular machines is not so much with the rear axles as it is with the clutches on them. It so happens that the clutches on these cars engage too abruptly. In fact they take hold so positively that the rear wheels will spin unless the clutch and accelerator pedals are very carefully manipulated. To spin the wheels every time the car is started soon results in severe wear and tear on the rear-axle mechanism. Yet there are two owners of these cars who have no rear-end trouble whatever, and the explanation is found in the fact that they habitually engage their clutches so gently that the wheels never slip. Easy clutch engagement on these cars does not call for great skill. Any ordinary driver can get on to the knack after a few trials, but the trouble is that the average owner of one of these cars does not possess sufficient sympathy to put forth the little effort required in order to engage the clutch properly.

"I suppose that I shouldn't kick, because the neglect of the automobile owners in this town explains why

my business is so good, but I'm sure that there would be many more automobiles in use if the average car around our town gave better service because it was accorded more considerate treatment. But whether I should gain or lose, if motorists treated their cars with more consideration, I know that I should be a lot happier. To any machinery lover, it is grim tragedy to see so many fine mechanisms ruined right before your eyes year after year.

"Then, too, I am frequently blamed when the trouble may be traced to the owner's own carelessness. Not so long ago I took up the bearings on a certain car. I did the work myself with the utmost care, and am quite positive that they were not too tight. About a week later the oil supply ran low, a bearing loosened up and I got the blame. This motorist hasn't been near me since and so I have had no opportunity to convince him that it was lack of oil and nothing else that caused the trouble.

"I wonder when motor car owners will realize that the automobile needs the same considerate treatment that the horse required."

THE NEW BOULEVARD TO THE TOP OF TAMALPAIS

(Continued from page 15)

azaleas fill the air with their beautiful perfume; on the banks lacy wood warriors and the hardy sword-ferns mingle in graceful profusion, while the flickering sunlight filters aslant through the tree-tops and falls on the transparent hazel leaves, which lend a soft, green glint to the neighboring pool which ripples now and then with the action of numerous trout catching flies on its surface.

"Wandering beneath these perennial columns, these huge monoliths of whose birth there is no record, one feels as if he were treading the grandest of cathedral aisles, and that in truth 'The groves were God's first temples' and 'Solitude is the veritable audience chamber of the Creator.'

"No echo follows your footsteps on the soft needles and azaleas and, save for the murmuring of the little stream and the occasional calling of a mourning dove in the tree-tops, there is no sound. Here, alone in these solitudes, the higher self—the soul—strikes off its shackles, and expands to the very infinitude of things, through nature to the Infinite."

The Ridgecrest Road

The Mount Tamalpais Ridgecrest Boulevard Company was organized through the agitation of the San Anselmo Chamber of Commerce and other Marin County civic associations

for the purpose of constructing a long-needed highway to the summit of one of the most famous of the California mountains. To insure the road being a public asset and to guard against its deterioration into a money-making proposition, it was incorporated in the by-laws of the company that dividends should be limited to ten per cent and that the balance of the net profits derived from the operation of the toll road should be used for repayment to individuals for the cost of the construction of the road. After these repayments have been made the plan is to use the income to build further roads, or the highway system thus built may be turned over to the county, at the discretion of the stockholders in the company.

The declared purpose of the highway is "to awaken the North of the Bay counties to the advantages that will be derived through active construction of roads through the scenic districts of the counties." Through the conception and organization of the Mount Tamalpais Boulevard plan, the moving desire has been the development of the beauties and wonders of Marin County.

Nine Miles in Length

The road will extend for six miles from Ridgecrest to Rock Springs and then for three miles farther to the Tav-

ern on Mount Tamalpais. Arrangements have also been made for the construction of a mile of road from Rock Springs to the point where the proposed Mill Valley-Stinson Beach highway will cross the divide.

Early in June the dedicatory exercises for the boulevard will be held and Governor Stephens has been asked to officiate and to declare the road a monument to the Pioneers of California. State, county and city officials throughout northern California will be honored guests.

Like Arthur's Seat

Tamalpais is as unique in its way as the world-famous "Arthur's seat," which is one of the glories of Edinburgh, Scotland. The mountain itself is the main portion of the county of Marin and is surrounded on three sides by water. It looks, on the map, like a gigantic finger pointing toward the narrow channel of the Golden Gate.

Marin, the famous chief of the Lacatuits, after whom the county was named, occupied the region prior to the settlement by the Americans. Between 1815 and 1824 he led his tribe to victory after victory over the Spaniards who tried in vain to secure a firm foothold on the peninsula. Marin was finally captured and his tribe was scattered but he escaped and

(Continued on page 42)

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BETTER SPRINGS ARE COMING

(Continued from page 17)

well with only one passenger. But, alas, the weaker springs would quickly break when asked to carry several passengers.

The ideal spring, therefore, would be one which was weak when the load was weak when the load was small and strong when the load was large. This highly desirable end is obtained in this spring automatically. It operates on the well-known principle that a spring with long leaves flexible enough to carry a single man comfortably, can be made stiff enough to carry a heavy load by shortening its effective length. In this spring the effective length automatically becomes less as the weight on it increases. A glance at the spring will prove the complete truth of this contention. When there is no weight on the spring the distance between the points where the bow ends contact is great, but as weight is put on and the spring is compressed, the bow ends come into contact for a greater distance and thus the effective length of the spring is reduced. The heavier the load the smaller the length. Therefore this spring will give practically constant riding qualities where there is but one person in the car or a dozen. Its increasing stiffness makes it almost impossible to overload it to the breaking point, and this feature also renders it safe against severe bumps; the greater the jolt the stiffer the spring becomes.

New English Spring

Easy riding qualities and freedom from lubrication troubles are obtained in a radically different way with a spring (B) which is attracting much favorable attention in England. It consists of two long, thick leaves running the full length of the car, one pair of leaves for each side. The front ends of the springs are clamped to the front axle and the rear ends to the rear axle. These enormously long, simple leaves give a remarkably easy riding car. In tests, a car equipped with them was driven over manholes several inches above the road surface, over big stones, curbs 10 inches high and various other obstructions, with-

out jolting the passengers. At the same time these springs are remarkably easy riding on rough country roads. These springs will stand up in service which would quickly break springs of the ordinary type.

They are practically unbreakable because strong, stiff, thick leaves are used, flexibility being obtained by the length of the members and not by smallness of cross section. The smooth riding quality is partly due to the fact that a road shock felt by one wheel is absorbed by the whole spring.

Spring bolts are eliminated because the spring ends are bolted solidly to the axles and the spring is attached to the car frame at two points by mounting between two rubber blocks set in a bracket.

Promising Australian Design

Another promising design hails from Australia (C) and is the most interesting feature of a new car, assembled largely from American units, brought out particularly for rough roads found on that continent. In fact, it is stated that the car may be driven across rough fields without much discomfort to the passengers and without any danger of spring breakage. There are three springs on each side of the car, extending the full length of the frame. The front end of the first spring is bolted to the front axle and the rear end of the rear axle. The other spring ends are shackled together. The effect of this peculiar construction is that when a wheel goes over a bump the shock is transmitted throughout the whole spring system. This holds true whether the wheel drops into a pot hole or strikes a large stone. The consequence is that this car may be driven at good speed on the worst roads or cross country without severe discomfort and without any fear of spring

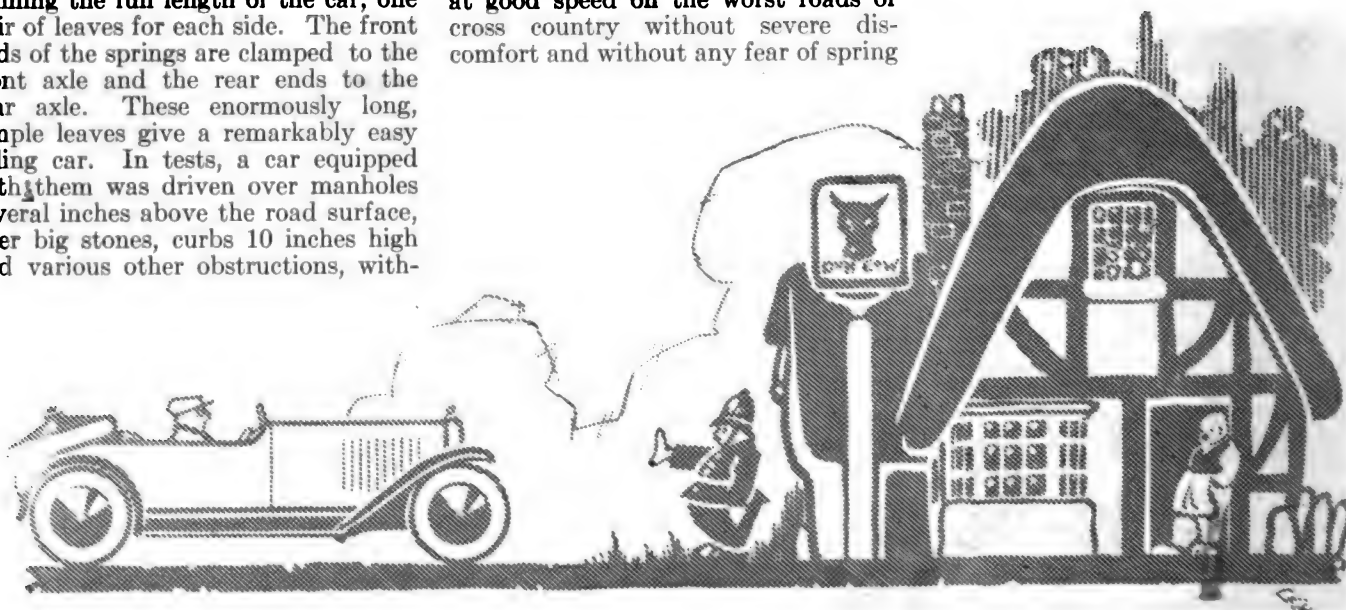
breakage, for the springs are unusually strong—much stronger than would be possible with the ordinary design.

This spring and the preceding type are also easy riding because the bulk of the spring weight is not carried on the axles, and nearly everyone knows that the smaller the weight of axles, wheels and other parts which move up and down with them, the slower the car is to respond to road shocks. The latter has spring bolts which must be fabricated.

It would be an easy matter to design a car which would ride smoothly on any rough surface, if only the unsprung parts had no weight. If wheels, axles, tires and spring members which move up and down with the wheels, had no weight a car might be built to ride perfectly on any road. And other things being equal the lighter the unsprung parts are in proportion to the spring weight the easier the car rides. Likewise if the proportion of unsprung weight is large the car does not ride so well. This fact partly explains why heavier cars ride better than light ones, and fully loaded cars better than lightly loaded; the remainder of the explanation has already been given in discussing the first spring.

Closed Cylinder Spring

The ordinary cantilever has some advantage over the other well-known spring types in that only a small part of it moves up and down with the axle. And recently, two designs have appeared in which not only is the unsprung spring weight largely eliminated but the axles are also, the springs supporting the wheels directly. In a new French automobile (D) each of the four wheels is connected to a lever



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arm whose free end bears against a coil spring suitably housed in a closed cylinder. The natural tendency of the coil spring to oscillate unduly is damped out by the use of a piston at the base of the spring working in a cylinder full of glycerine. This glycerine dashpot takes the place of the friction between the leaves of the ordinary spring. In this car unsprung weight has been brought to the irreducible minimum.

Why unsprung weight should have such an important effect on the ease of riding is not hard to understand. When the wheel of a car hits a bump the wheel starts upward, delivering an upward blow to the spring which softens the force of the blow before passing it on to the car body. Plainly the greater the weight of these unsprung parts the more severe will be the blow delivered. Hence the riding quality of a car is almost directly proportional to the smallness of the unsprung weight.

In this French car the two front spring units are connected to a cross member of the frame, while the wheel spindle is mounted on the end of an arm which is pivoted at the end of

the cross frame member. Immediately adjacent to this pivot point is a cylindrical chamber which has the coil spring at its upper end and the piston at its lower end. The piston bears against the spring and is connected to a short crank whose other end is attached to the wheel. If the wheel is pushed upward by a bump it compresses the spring. Rebound and oscillations are checked by the downward movement of the piston which squeezes glycerine out through several small holes. The coil spring is of varying section so that it offers a gradually increasing resistance. It is extremely sensitive to small road inequalities yet it is stiff enough to withstand severe road shocks.

The rear springs are mounted in similar fashion. Here the interest centers around the bevel gear and differential housing which is bolted solidly to the rear frame cross member. Since the wheels must be free to move up and down while the bevel housing is stationary it is obvious that there are universals in the shafts running from this housing to the wheels.

Eliminate Axles

The Adria (E), an American car brought out more than a year ago, also has no axles, double transverse springs being employed in their stead. The mounting of the differential unit is similar to that employed on the French car.

The use of ordinary half elliptic springs with the elimination of spring bolts and their lubrication troubles is to be seen on a new model shock-insulated bus (F) in which the end spring leaves fit into rubber blocks which are carried in suitable brackets. The fact that these rubber blocks are strong enough to stand the strain on a five-ton truck is proof enough that the same construction might be adapted to passenger car practice.

Another ingenious method of eliminating the spring bolt is seen in the recent development of a fabric "shackle." At the rear, for example, the frame horn is hung from the end of the spring by plies of fabric about as thick and strong as the spring leaves themselves. The plies are anchored top and bottom in nickel-plated sockets which also prevent undue play.

NEW ROUTE TO YELLOWSTONE PLANNED

(Continued from page 19)

Blazing the Trail

Late last fall a party of enthusiastic motor tourists left Ashton, Idaho, with the idea of ascertaining the feasibility of the construction of an automobile road through Targhee National Forest at a point that would provide an Idaho entrance into the Yellowstone region.

Twelve miles from Ashton the automobiles had to be abandoned and the party proceeded afoot. After a three hours' tramp the top of the Falls River divide was reached and here a magnificent outlook was to be had. Mount Moran and Grand Teton, sublime in their awe-inspiring height, make up a great part of the horizon line. After descending the easy slopes of the divide the Falls River was encountered, which, with its silvery ripples, is an everlasting lure to the angler.

Here, twenty-four miles from the town of Ashton, is the boundary line of

the park and an impressive entrance to this great wonderland of nature.

Cave Falls, a wide expanse of water, 40 feet in height, raises the echoes through the forests. Twenty-five miles from the park boundary line and fifty miles from the town of Ashton is Old Faithful, the geyser attraction of the Yellowstone.

Gems of Waterfalls

The richest gems in waterfalls lie along this Idaho entrance trail. Just off the proposed highway and easy of access, there are other jewels, such as Bridal Veil and Figure Eight Falls in the Boundary River, Cavern Falls on the Little Fork, Union Falls in Mountain Ash Creek—a thing of great beauty. Then there are Colonnade Falls, Rainbow Falls, Iris Falls, Double Falls, Ragged Falls, the Cascades of the Bechler River. Then there is Ouzel Falls on the west fork of the

Bechler, and Terraced Falls on the Falls River, and many others, a veritable paradise of nature, abounding with trout and all manner of fish.

There are excellent camp sites, and the water of these rivers and creeks is good for drinking purposes, which is not the case with the Madison, Firehole and Yellowstone rivers.

The proposed road, which would make for Idaho an excellent way of entrance to the Yellowstone National Park, necessitates only the construction of a twelve-mile stretch, and the unique advantages which this way of approach offers in the way of scenery argue for its early completion.

The road at the Idaho entrance to the Yellowstone would automatically create three loops or four opportunities to carry the tourist traffic into the Yellowstone Park from the west and, naturally, opens up many new regions heretofore inaccessible to motor traffic.

MOTOR TRUCKS AND RAILROADS

Motor stage operators have no right to convert to their own profit the money paid by taxpayers for the construction and maintenance of highways, according to the Public Utilities Commission of Colorado which has handed down a decision which may form a precedent for decisions in

similar cases by other state public utilities commissions.

The Colorado Commission made an investigation of the transportation conditions in Eagle and Garfield counties, through which the bus lines wish to operate, and found that in the two counties, although there were sixty-

eight motor trucks operating as public carriers, they paid into the state treasury only \$819 per year for use of the state and county highways.

The Denver & Rio Grande Western Railroad, which these busses parallel, paid during the same period \$38,023 for the public roads, which they do not

WIRE WHEELS



five wheels,
triple spoke,
detachable
at hub

Illustration shows wrench with cam lever by which locking barrel is disengaged. Below (at left) is shown outside view of hub cap with locking device disengaged; same is shown (at right) in locked position.

The Positive Locking Hub Cap Feature on Wire Wheels

The positive locking hub cap is held securely in position by means of a multiple number of teeth on the locking barrel engaged with an equal number of notches on the inner hub of the wheel—a construction that affords positive protection against wear and loosening of wheels.

The wheel itself is made with a smooth-faced hub shell laced into a rim of 72 spokes arranged in Triple Rows. Eighteen tapered corrugations on the inner surface of the hub shell mesh with similar corrugations on the inner hub, insuring a positive and efficient drive at all times. Thus, with this Wire Wheel, motorists are assured the utmost in beauty, strength, long life and dependable service.

The Branches and Stations listed below are equipped to render complete service on all types of Wire Wheels.

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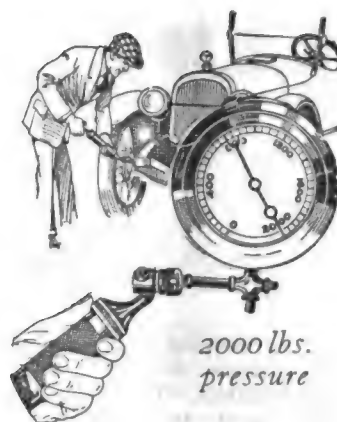
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CRITZ your car!

use at all, and in addition other taxes, making the total in these two counties paid by the railroad company \$153,896.

The portion of the decision which is of special import is that defining "public convenience and necessity," which is as follows:

"Public convenience and necessity, by which must be understood the convenience and necessity of the people

at large as contradistinguished from the convenience and necessity of a very small number of persons who seek to derive a profit from the farmers' and home owners' investment in roads, never contemplated that the truck driver should destroy that, to the cost of construction of which he contributed little or nothing, or that he should reap where he has not sown. When the taxing laws of this State are so amended

that the truck driver operating over state highways shall contribute his due proportion to the cost of construction and maintenance of our highways, then, and only then, can this commission regard his use, under proper conditions and restrictions, of a great and tremendously expensive public facility as of equal dignity and equal benefit to the people with the moderate use thereof by the ordinary taxpayer."

MILADY MOTORIST

(Continued from page 16)

clothes of winter and stepping into lighter, brighter and more delicate garments for warmer weather. There are some beautiful new shades this season—a soft henna-like shade called Ladybird, and soft blends of greens and blues. A great deal of tan and gray is being worn, these clothes being utility shades that can be worn with any bright color.

Fringe Is Popular

Wherever it is possible to do so the sport costumes are fringed. The bottom of the skirt, the edge of the coat, the sleeves and even the pockets trail

off into shaggy fringe—and it gives a very smart effect. Deep fringe is used to trim capes and also the ends of scarfs. By the way, no sport costume is complete without its varicolored scarf to top it off with a bright note of color. Some of these scarfs are of silk, but some wool ones are worn too. Wool scarf and hat sets are popular, although they are somewhat uncomfortable for hot-weather wear.

For the long motor trip there is nothing so comfortable and useful as the polo coat, which is developed this season in the fashionable tweed, or camel's hair. Some very good-looking

ones are of cream color with large cross-bar effects in purple, or green, or red. Others are checked in a smaller pattern, sometimes bringing in several colors. These coats do not quite reach the hem of the skirt, and are cut rather full, although some people prefer to wear a belt rather than the saucy flare that is so becoming to some types.

A clever model of this season is the reversible cape, of which one side is a subdued shade—gray or tan perhaps—and the other side a brilliant color—red, blue or green—or anything for variety. These capes are particularly popular for beach wear, and sometimes match the bathing suit.

EAST SIDE HIGHWAY DEDICATED THIS MONTH

141 Miles of Unbroken Concrete Passes Through Eighteen Cities and Towns and Five Counties

THE East Side Highway, one hundred and forty-one miles of unbroken concrete through the Sacramento Valley, has been completed and this accomplishment will be fittingly celebrated at Red Bluff this month.

Threading, as it does, one of the richest agricultural districts in the world, as well as a country varied in scenic attraction and romantic in its historical associations, it marks a distinct step forward in the way of highway improvement.

The East Side Highway passes through eighteen cities and towns and through five counties. From Sacramento, the state capital, rich in historic lore of the days of '49, the motorist proceeds to Roseville, the railroad junction where thousands of cars of fruit are iced for shipment east. Roseville is the gateway of the Auburn route to Lake Tahoe.

The next town is Lincoln, famous for its great pottery works which send their wares to all parts of the west. Then comes Wheatland, site of the

largest hop fields in the world. This is the center of the rich Bear River district of southern Yuba County.

Marysville, the next city encountered in the run north, is the county seat of Yuba County and the hub city of the Tahoe-Ukiah highway. It is the trading center for a rich agricultural district producing fruits, alfalfa, grain and rice. It has an excellent automobile camp.

Yuba City, just across the river, is the county seat of Sutter County, the leading peach producing district of the state. Live Oak, seedless grape center, Gridley, with its peach orchards and rice mills; and Biggs, the birthplace of the rice industry in California, are encountered a few miles farther on.

Then comes Oroville, county seat of Butte County, famous citrus center of northern California, producing the earliest oranges grown in California. Olives are raised and the largest olive processing plant in the world is located here. Oroville is the gateway to the resorts in the Feather River canyon.

Durham, site of the first state land colony, is about half way between Oroville and Chico, the second largest city in the Sacramento Valley. Chico was founded in 1860 by General John Bidwell, associate of Captain Sutter and Peter Lassen. Here is located the great field station of the Department of Agriculture and the Hooker Oak, the largest of its kind. Chico is the southern gateway to Lassen National Park.

Vina, home of Peter Lassen, the pioneer, Los Molinos and its colony and Tehama, the railroad junction, are passed on the way to Red Bluff, county seat of Tehama County. Red Bluff is known as the hub of the east and west side highways. It is the site of the proposed Iron Canyon dam to empound the waters of the Sacramento River for the irrigation of hundreds of thousands of acres of Sacramento Valley land. To the east is Mount Lassen. A good automobile camp is located here.

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You can assure yourself that the gasoline is going from the pump into your tank, if you patronize a filling station that is equipped with a Bowser Chief Sentry.

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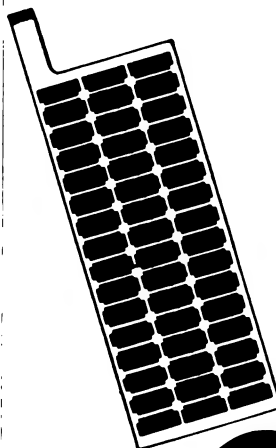
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SUCCESSFULLY ELIMINATED
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THE NEW BOULEVARD TO THE TOP OF TAMALPAIS

(Continued from page 34)

found refuge on a tiny island in the bay. He was captured a second time and would have been shot except for the pleas of the mission fathers of San Rafael.

Following his rescue by the priests he was converted to Christianity and he spent the rest of his life in San Rafael, where he died in 1834. He and his tribe often piloted tule rafts about the bay, and it was Marin who, in 1822, assisted Commandante Arguello to carry from Corte Madera the first cargo of lumber for use in constructing barracks at the Presidio.

The first mention of Indians in Marin County is recorded in a legend that tells of an expedition of Spaniards who at the time of the erection of the Mission Dolores buildings at San Francisco, crossed the strait at Lime Point and travelled up the northern coast peninsula. They were hospitably received by the Indian tribe that inhabited the region and in turn taught the aborigines how to make brick.

The Mission Record

Father Palou, the biographer of Junipero Serra, records that in 1776 "after the Presidio and before the mission were established an exploration of the interior was organized as usual by sea and by land." This refers to the exploring trip made by the Spaniards on the Marin shores.

Many relics of the Indians have been discovered in Marin. Mortars for grinding grain have been unearthed in creek beds, as well as pipes, beads of wampum, oyster picks, skulls and even whole skeletons.

When the Spaniards first visited the district there were said to be thirty tribes of Indians, each with its individual chief and its individual language or dialect. They dwelt in huts of the tules which grow in the marsh lands, woven together, and their food consisted of fish and mussels and the game which they secured with the aid of their bow and arrow.

There are still many deer to be found on the shoulders of Tamalpais. Motorists passing over the Bolinas road from Fairfax often see small groups of them and in the closed season they are comparatively tame.

Home of the Spirits

When the lines of survey were laid

by the government during the lifetime of Marin, it was planned that the center of the survey should be placed on the summit of the mountain. But the surveyor in charge was in need of some helpers and endeavored to secure the services of Marin and some of his tribal followers. But the proposal met with grunts of fear. "The mountain," declared Marin, "is the home of spirits of evil, of demons of trouble and death and no Indian may make the ascent and return alive."

The surveyor finally set out alone and constructed a rude cross on the summit to show the suspicious Indians that he had made the ascent and had returned in safety. Marin then decided that he would make the trip. He did and hung a blanket on the cross to show that he had made the journey successfully. On his return to his followers he was looked on with awe and the absence of his blanket was believed to have been the work of the devils on the mountainside.

One of the sides of Tamalpais which is often neglected, is the slope that runs down to the Golden Gate. This is approached through the government reservation of Fort Barry and leads to Point Bonita. It provides some excellent mountain scenery, a remarkable view of the Golden Gate and San Francisco. At the lighthouse is a vista of rare beauty. Across the Golden Gate of the harbor of San Francisco lies the Presidio, its white buildings glittering in the sunlight. The Cliff House and Seal Rocks stand out from the shore line.

To the southeast are the hills of San Francisco, the skyline of the city standing out like the marbled dwellings of ancient Rome. Northward you may see as far as Bolinas, which when the tide is low stands on the edge of a long level beach. From the lighthouse to the lagoon of Bolinas is as wild a coast line as you can find on the northern shore.

Circuit of Tamalpais

If you would make a complete circuit of the famous old mountain you may follow the road to Stinson Beach and return by way of Manzanita Canyon and Tamalpais Valley to Fairfax, and back on the pavement to Sausalito again.

There is always a pleasant rural

scene to be found on the slopes of old Tamalpais. Iris and mallow, and buttercup and daisy, and lupin and poppy carpet these slopes in the spring and summer months and its redwoods and purling streams provide a thousand and one delightful places for a motor picnicking trip.

It is on the shoulders of Tamalpais that Daniel O'Connell, the poet, lived and died. A granite seat, fifteen long, on the bank above the highway has been erected in his memory, and "O'Connell Glen" marks the home of one of California's favorite bards.

Tamalpais has been the theme of many a story and legend and poem, but perhaps the most famous of the lyrics inspired by its mighty crest is Clarence Urmey's lines "As I Came Down Mt. Tamalpais."

"As I came down Mt. Tamalpais,
To the north the fair Sonoma Hills
Lay like a trembling thread of blue
Beneath a sky of daffodils;
Through tules green a silver stream
Ran south to meet the tranquil bay,
Whispering a dreamy, tender tale
Of vales and valleys far away.

"As I came down Mt. Tamalpais,
To south the city brightly shone,
Touched by the sunset's good-night
kiss
Across the golden ocean blown;
I saw its hills, its tapering masts,
I almost heard its tramp and tread,
And saw against the sky the cross
Which marks the City of the Dead.

"As I came down Mt. Tamalpais,
To east San Pablo's water lay,
Touched with a holy purple light,
The benediction of the day;
No ripple on its twilight tide,
No parting of its evening veil,
Save dimly in the far-off haze
One dreamy, yellow sunset sail.

"As I came down Mt. Tamalpais,
To west Heaven's gateway opened
wide,
And through it, freighted with day-
cares,
The cloud-ships floated with the tide;
Then, silently through stilly air,
Starlight flew down from Paradise,
Folded her silver wings and slept
Upon the slopes of Tamalpais."





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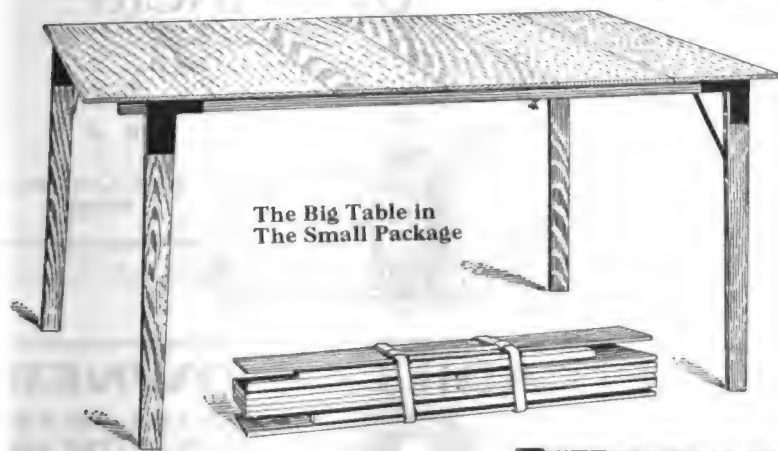
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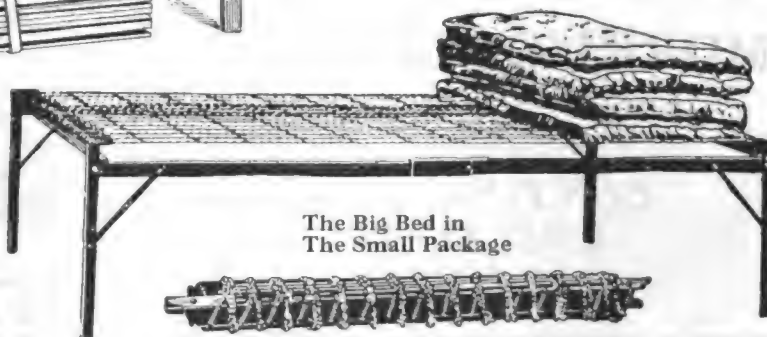
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180 New Montgomery Street . . . San Francisco

THE LURE OF THE HIGH SIERRAS

(Continued from page 30)

place, and though considerably wider behind the fall, it is rounded on the edge by the action of the water, and the fall is liable to be swayed against it even in calm nights; therefore one is in danger of being washed off. My own experiences one night back of the fall, when it was booming in all its

glory, were such that I shall never venture there again. But the effect was enchanting; wild music above, beneath, around. The moon appeared to be in the very midst of the rushing waters and struggling to keep her place, on account of the ever-varying density and forms of the masses

through which she was seen; now darkened by a rush of opaque comets, now flashing out through openings of gaudy tissue, suffering a rushing succession of eclipses that lasted but a moment,—a rare astronomical phenomenon, a transit of a thousand comets across the disc of the moon."

Ferry Schedule for Motorists

MOTORISTS and dealers will find our automobile ferry schedule, showing the time of arrival and departure between San Francisco and all ferry points, of great convenience. Write or call and we will be pleased to give you a copy.

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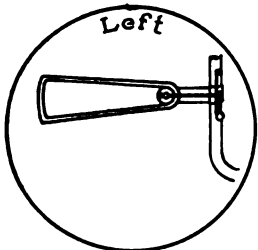
ready to be installed in your car. Order direct or through your garage.

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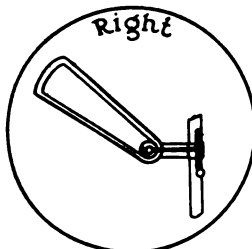
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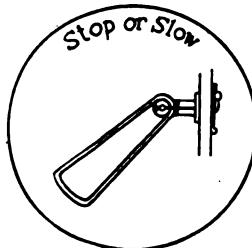


WHICH is preferable? Compare the cost of the *Inter-State Signal* with that for Collision Insurance. With the latter, one is reimbursed *after* the accident; with the former the accident is *prevented*. You should have both, just as you should have both of your hands free to drive your car.

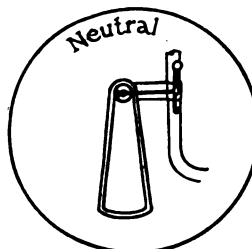


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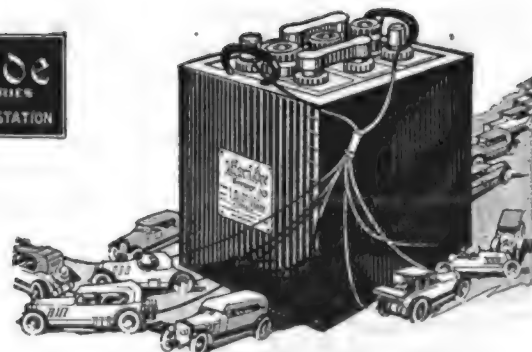
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The Long-Life Battery for Your Car

HINTS ON THE CARE OF THE CAR

A Few Valuable Pointers for the Man Who Repairs His Own Machine

A Few Tire Hints

In placing a tube in a tire, the tube should be first inflated sufficiently to hold it round. French talc or soap-stone should be dusted into the tire to prevent the tube from sticking to the casing. The powder also acts as a lubricant. Care should be taken not to use too much as a surplus quantity will collect in lumps and the lumps are likely to wear the tube.

When inflating a tire it is well to wet the valve stem occasionally to see that the valve is tight. If the valve leaks it should be replaced. Underinflation troubles are largely caused by valves which leak.

While the average tube will last longer than the average tire it is not good economy to put an old tube in a new tire.

Spare tubes should be carried in their boxes or carefully wrapped to prevent chafing and contact with grease and oil.

Testing Front Wheel Bearings

In examining front wheel bearings, remember that there are two bearings

to each front wheel and that these are held in place by a spindle nut which is fastened with a cotter pin. A safety washer is interposed between the outer bearing and the nut. Conical roller or ball bearings may be adjusted. Adjustment is effected by drawing the spindle nut up tightly, revolving the wheel a few times to insure that all parts are properly seated, at the same time tapping the safety washer lightly to insure a proper contact with the outer bearing. The wheel will now revolve somewhat stiffly and proper adjustment can be obtained by backing off the spindle nut to cotter pin slots. Lock the nut at this point with the cotter and test the adjustment by spinning the wheel. The wheel should rotate freely but without perceptible shake. In testing for shake it is advisable to insert a chisel or small bar between the steering knuckle and the axle to insure that any play in the king bolt is not confused with play in the bearings.

Applying Brakes

Apply the brakes considerably and the car will soon show its gratitude, because gentle brake application reduces

the strain on tires, wheels, springs and other parts. If the brakes are applied with full force at least one, if not both, rear wheels are likely to lock, and in sliding along the ground a noticeable amount of rubber is scraped from the tire at the point where it contacts with the ground. There is no quicker nor more certain way of sending tires quickly to a rubbish heap or the junkman. Harsh brake application wears the brake lining unduly and pulls and wracks the whole car. Much greater economy will be obtained and much less trouble will be experienced if the brakes are used as sparingly as possible. Ordinarily when it is necessary to slow down the most economical plan is to close the throttle and let the car lose momentum gradually, without hastening the action by applying the brakes.

How to Polish Nickel

Nickel trimmings may be kept bright and untarnished by frequent rubbing with an oily rag. Never use brass polish on nickel as the abrasive particles scratch the surface. Silver polish is best to remove tarnish from nickel.

THE SHORT WAY FERRY

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Travel via the "SHORT WAY FERRY" on the fastest and most modern AUTO FERRY BOATS afloat.

Two Boats—HALF HOUR SERVICE

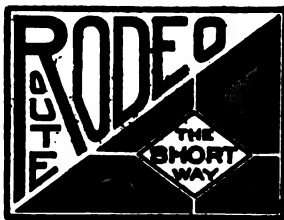
EXCELLENT DINING SALOONS

Phones Vallejo 7F2 — Crockett 14F11

RODEO-VALLEJO FERRY CO.

AVEN J. HANFORD, Manager

Rodeo, California



NO CURVES—NO GRADES

TIME SCHEDULE		LEAVE VALLEJO DAILY	
7:00 a. m.	3:30 p. m.	6:45 a. m.	2:40 p. m.
7:30 a. m.	3:40 p. m.	7:15 a. m.	3:00 p. m.
8:00 a. m.	4:00 p. m.	7:45 a. m.	3:20 p. m.
8:30 a. m.	4:20 p. m.	8:00 a. m.	3:40 p. m.
8:40 a. m.	4:40 p. m.	8:20 a. m.	4:00 p. m.
9:00 a. m.	5:00 p. m.	8:40 a. m.	4:20 p. m.
9:20 a. m.	5:20 p. m.	9:00 a. m.	4:40 p. m.
9:40 a. m.	5:40 p. m.	9:20 a. m.	5:00 p. m.
10:00 a. m.	6:00 p. m.	9:40 a. m.	5:20 p. m.
10:20 a. m.	6:20 p. m.	10:00 a. m.	5:40 p. m.
10:40 a. m.	6:40 p. m.	10:20 a. m.	6:00 p. m.
11:00 a. m.	7:00 p. m.	10:40 a. m.	6:20 p. m.
11:20 a. m.	7:20 p. m.	11:00 a. m.	6:40 p. m.
11:40 a. m.	7:40 p. m.	11:20 a. m.	7:00 p. m.
12:00 p. m.	8:00 p. m.	11:40 a. m.	7:20 p. m.
12:20 p. m.	8:30 p. m.	12:00 p. m.	7:40 p. m.
12:40 p. m.	9:00 p. m.	12:20 p. m.	8:15 p. m.
1:00 p. m.	9:30 p. m.	12:40 p. m.	8:45 p. m.
1:20 p. m.	10:00 p. m.	1:00 p. m.	9:15 p. m.
1:40 p. m.	10:30 p. m.	1:20 p. m.	9:45 p. m.
2:00 p. m.	11:00 p. m.	1:40 p. m.	10:15 p. m.
2:20 p. m.	*11:30 p. m.	2:00 p. m.	10:45 p. m.
2:40 p. m.	*12:00 p. m.	2:20 p. m.	*11:15 p. m.
3:00 p. m.	*EXTRA TRIPS SUNDAYS AND HOLIDAYS ONLY	*11:45 p. m.	



MODERN EXPLORERS hunt out the interesting bypaths with automobiles. Points of interest become realities instead of visions as was the case before the auto reached its present degree of necessity.

As knights of old went forth on a richly caparisoned charger so should the modern explorer be agreeably presentable with a modern motor car, resplendent with its coats of enamel.

A FEW FULLER AUTO NECESSITIES

Speedite Auto Finish.
Repaints and varnishes at one application. 10 colors.

Quick Repair Black Enamel, for retouching hood and fenders.

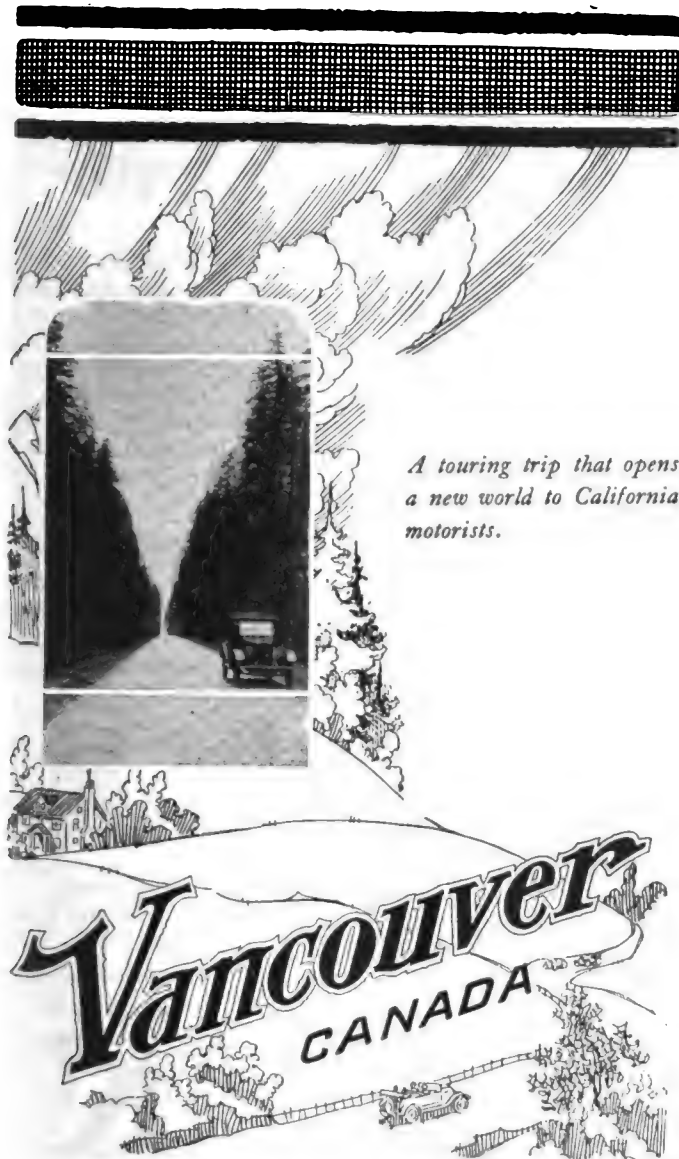
Fuller Auto Varnishes.
Unsurpassed for wearing properties and beauty of finish.

Auto Enamels. Made in 6 pleasing colors.

At your Dealers

W. P. FULLER & CO.

"Since '49"



*A touring trip that opens
a new world to California
motorists.*

The Northern terminus of the Pacific Highway---just across the International Boundary---a trip that takes in Northern California, Oregon, Washington and British Columbia.

Hundreds of Californians took this trip last year. Enquiries indicate an even larger number planning to take it this year.

A Paradise for Motorists

Vancouver is the center of a system of scenic drives and auto highways which take in the famous scenic beauties of British Columbia---something new and interesting every day and hour of your stay.

UNEQUALLED CONDITIONS FOR TOURING

Ideal summer climate---No extreme heat---Nights always cool---Occasional refreshing showers---16 hours daylight motoring.

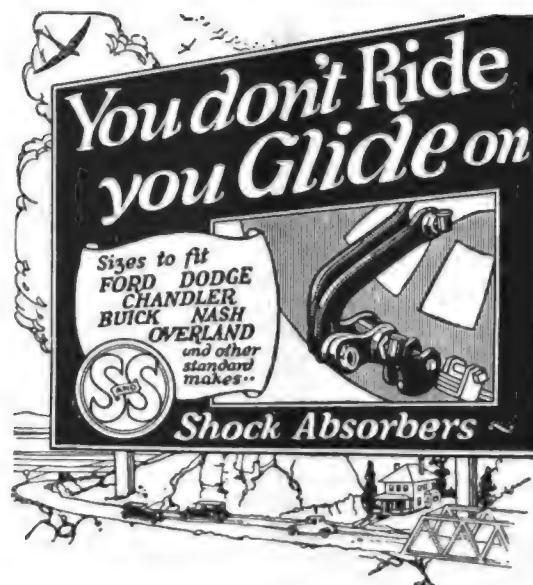
No trouble at Boundary---30 day touring permits granted without bond.
"Keep to the Right" is now the rule of the road in British Columbia.

WRITE TODAY FOR 1922 FOLDER

Handsomely illustrated---describes a country every motorist should tour.

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S & S Shock Absorbers provide that restful, buoyant, gliding feeling that makes you forget you are riding. Not accessories---S & S are actual necessities to those who desire delightful riding comfort with economical upkeep.

S & S stop the shocks---don't scatter them. No springs, no coils, no straps---a sensitive, resilient, roller bearing shock absorber that destroys all shocks before they have a chance to break springs, strain the motor or cause discomfort to the passengers.

Unbreakable malleable iron, no working parts to adjust, nothing to need replacing. Owners invariably take them off when they trade in or sell their cars.

If your dealer does not have S & S write direct to nearest distributor or factory for literature and prices. Mention car make and model.

10 DAYS FREE TRIAL

If car owner is not perfectly satisfied S & S Shock Absorbers are taken off and no charge made. We protect dealer and car owner. Dealers who want this kind of square deal should write nearest distributor for literature, discounts, territory.

Western Distributor

Western S & S Shock Absorber Company
1322 South Grand, Los Angeles

Manufactured by

STARKWEATHER-SNOOK CORPORATION
MOLINE, ILLINOIS



WITH THE ORGANIZED MOTORISTS

(Continued from page 24)

larger damaged areas with concrete and the smaller ones with asphalt. It is expected that traffic will be resumed about June 1st and continued for twenty-five days unless the heavier sections break down sooner.

The Highway Commission states that the public is invited to witness the tests as they progress and that all of the information obtained will be made available.

The California State Automobile Association, according to H. J. Brunnier, chairman of the Good Roads Committee, through its Good Roads Bureau, will have an engineer constantly at the site of the investigation, as before, and will continue to collect all the information possible to obtain, for it feels more than ever the dire need of investigations of this nature.

California State Automobile Association Sign Work

Seven hundred yellow and blue road markers will be erected by the California State Automobile Association in San Mateo, Plumas and Sierra Counties. The task of erecting 176 C. S. A. A. signs in Sutter County is now under way, and signs for Glenn, Colusa, Yolo, Marin and Napa Counties have been ordered.

In Mariposa and Tuolumne Counties 250 additional

signs will be erected and 396 direction and danger markers in Santa Clara County. The Association is now completing the erection of parking limit signs in the City of Oakland. Three trucks are being used by the Association for this work.

To Stop Sign Destruction

The co-operation of the school authorities of Lassen, Modoc, Shasta, Siskiyou and Trinity Counties has been asked by the Northern California Counties Association in a campaign to prevent destruction of the California State Automobile Association road signs. A circular is being sent to each teacher in the county and special instructions to children are being given stressing the necessity for and the cost of replacing road signs. The California State Automobile Association annually spends many thousands of dollars in replacing mutilated road markers.

Ben Lomond Road to be Closed June 5

The road from Ben Lomond to Boulder Creek will be closed on June 5th on account of paving. The only way machines can get to Boulder is via Big Basin, Waterman or Bear Creek road. The closing of this road means that motorists cannot go from Big Basin to Santa Cruz.

HERE AND THERE IN MOTORDOM

Breeze Bracket for Fords

Every Ford owner who has ever perspired in the heat from his motor on a hot summer day will welcome the Buckstaff Breeze Bracket. It makes possible the opening of the lower windshield so as to direct a

stream of air into the driver's compartment.

The bracket is a stout, workmanlike job. It fastens to the body in the same way as the standard Ford bracket, even to using the same bolt holes. It requires but a few minutes to install. It is finished in black enamel and does not change the appearance in the

least. The windshield hinges in a slot in the bracket and is made easily adjustable with wing nuts.

New Line of Cord Tires

Addition of a new line of cord tires to sell at popular prices, has been announced by

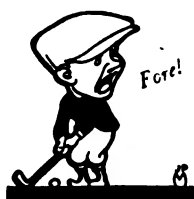
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IDEAL FOR MOTORISTS

Moderate rates—27
Acre Park—Golf,
Dancing, Riding and
all sports.



Please write for Chef's Book of Recipes



**Renewed Health,
Increased Vigor,
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—these things your vacation if spent at Tallac—will yield you.

Roads are good this season—so come in your automobile. A comfortable hotel—well managed and with an excellent dining room awaits you here.

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Shattering San Francisco to Portland record, with a woman driving a coupe. Time 22 hours 43 minutes.

Powerful-Economical-Reliable

TWELVE BUICK MODELS

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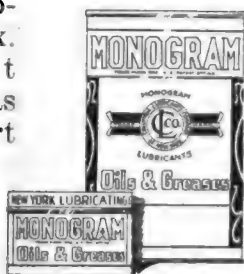
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Take a can on your trip

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Motorists who know the dangers of poor oil take an extra can of Monogram in the tool box. This guards against having to buy poor oil as well as running short where no oil is procurable.

—ask any expert



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Tire TROUBLES are SOLVED when you carry

Two Spares with The HARVARD Spare Tire Carrier



Showing car with extra tire locked in place

Attaches to your regular spare instantly. No straps, bolts or nuts required.

If your dealer cannot supply you, we will ship prepaid.



PRICES

30 x 3½ size . \$7.00
Large size . . 8.50

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You will derive greater pleasure and comfort from your trip through nature's picture gallery - California - if all your financial arrangements are handled by one bank.

Wherever you go in California there is always a Bank of Italy close at hand. With 45 banking offices in 33 of the state's principal cities, the service of this institution is admirably suited to the requirements of visitors and tourists.

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Write today for the most interesting booklet you have ever read. It describes in detail Kimkin Towing Dollies, Jacks, Wheel Pullers and Tow Bars.

KIMMERLE BROS., Manufacturers
683 Golden Gate Avenue, San Francisco

R. H. Daniels, manager of the San Francisco Branch of the Goodyear Tire and Rubber Company of California.

The new line will be called the cross-rib cord, on account of the cross-rib tread design. It will not supplant the well known all-weather tread tire of the company, but will be a companion line to it.

The new tire will be marketed through Goodyear Service Stations only and will sell at 20 to 25 per cent less than the all-weather tread tires.

It has been in course of development and testing for a number of months and will be ready for general distribution this month.

"There are two reasons for bringing out the new line," says the announcement. "One is to give our dealers a tire to meet the needs of customers to whom first cost is an important factor. The other is to give the dealers a tire for so-called commercial accounts, meaning firms who have a number of trucks and buy in quantities.

"Two changes only in the construction of the tire as compared to the all-weather tread tire have been made in order to effect the lowered prices. The tire, however, should give as high a mileage per dollar as the all-weather tread.

"The cross-rib cord is a one-cure tire, as against the two-cure process used on all-weather tread tires.

"Second, the design used on the tread permits an economy in the volume of rubber used. The all-weather tread tire, being designed to get the maximum of traction and non-skid properties, uses more actual rubber in the tread than perhaps any tire on the market. The tread rubber in the cross-rib cord, however, is a tough, slow wearing stock that should give excellent mileage to users."

The cord fabric used in the new tire will be made of the same quality of long staple

Arizona Pima cotton as the all-weather tread and the rubber will be of the same grade exactly, except in the tread. The tire will be the same full oversize as the all-weather tread except in the 30x3½ size.

44,000,000 Tires

When a new ship is launched at a shipyard, it is customary to have considerable ceremony accompanying the launching, including the breaking of a bottle of something against its side as it slides down the runways.

But if any of the larger tire companies of the country held similar ceremonies for each tire they sent from the factory out into the world, the bottle business and allied industries would take a big spurt.

For example, the Goodyear Tire & Rubber Company at Akron, recently completed the building of its 44,000,000th tire.

New Accessory Line

Announcement has been made of the expansion of the Warner-Patterson Company, makers of the Patterson lens, to include the distribution of a large line of automobile accessories.

The character of the line is evidenced by its first member, Warner Liquid Solder, distribution of which has already been started.

This product is the result of a belief on the part of Warner that proper circulation of water in the automobile is more important than gasoline. Warner says:

"If your car runs out of gasoline it will stop. But no damage is done. But if your car is run without water, ruinous damage to engine, cylinders, pistons, bearings and every other working part can be inflicted.

"When leaks develop in radiator, water jacket and pumps or water connections, they are often neglected because of the time necessary to make repairs and loss of car usage.

"With this new solder the mending of leaks is the matter of simply pouring the solution into the radiator. It quickly hunts out the leaks and mends them without interfering with the use of your car.

"The solution does not interfere with circulation. More than that it prevents rust and corrosion and does not injure the metal parts or rubber hose connections in any way."

Reorganization Effectuated

Reorganization of the Moline Plow Company has been completed. New plans for the company and its subsidiaries, chief of which will be the Stephens Motor Car Company, have been ratified.

The new company was launched with \$16,000,000 of current assets and with all current indebtedness cleared from its books except accrued and current expenses and \$70,000 of current accounts.

The most striking feature of the reorganization is the conversion of \$25,000,000 of indebtedness into \$12,500,000 of 20-year debentures and \$12,500,000 of first preferred stock—\$7,500,000 of old first preferred stock was converted into \$7,500,000 of new second preferred stock.

The officers elected are: Frank L. Wetmore, president of the First National Bank of Chicago, chairman of the board; George N. Peek, president; H. S. Johnson, executive vice-president; R. W. Lea, vice-president and manager of the Stephens Motor Car Company; F. W. Edling, vice-president and sales manager; C. B. Rose, vice-president in charge of tractor works; H. B. Dinneen, vice-president in charge of implement manufacturing; L. C. Shonts, secretary; L. C. Blanding, assistant secretary; F. N. Hoenigman and John Hammerich, assistant treasurers.

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170 ROOMS



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EVERY ROOM
WITH BATH



On the Coast Highway
between San Francisco
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"THE COMPLETE GARAGE"

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Opposite Postoffice at
Seventh and Jessie Sts.
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Official Garage



Open Day and Night
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Known for
Comfort, Quality and
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Price Complete
\$67.50

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MUSO OUTING EQUIPMENT CO.
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BUICK EXPERTS

Marvel Carburetor Service Station
Stock of Carburetors and Parts

WE SPECIALIZE IN BUICK REPAIR WORK
AND REBUILDING WRECKS

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SAN FRANCISCO, CALIF.

*End the Shocks that bring
motoring fatigue!*

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HYDRAULIC SHOCK ABSORBERS

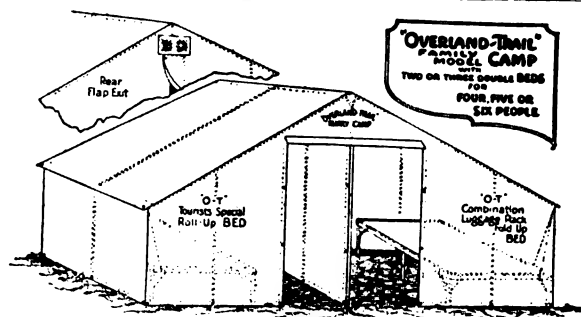


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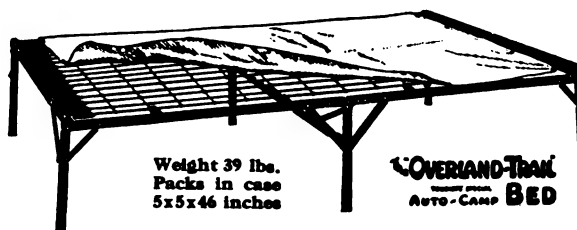


Center Curtain Used as Awning Over Door
All Camps Supplied with Heavy Net Door Curtains

Five 1922 Models

The **"OVERLAND-TRAIL"**
WEATHER-PROOF
AUTO-TOURING CAMPS
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Write for catalog and prices.

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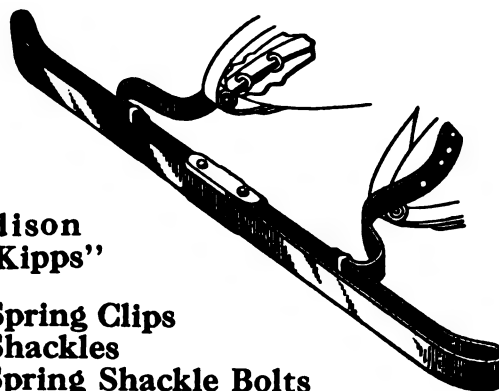
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"Largest West of the Mississippi"

FOR AUTOS AND TRUCKS

**CHROME VANADIUM and CARBON
STEEL SPRINGS**



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UNBREAKABLE, RATTLE and SQUEAK PROOF



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Alturas..... Hotel Niles	Carl Inn..... Carl Inn Hotel	Etna Mills..... Blake Hotel	Hayward and Dublin)
Alturas..... Modoc Auto Co.	Carmel by the Sea..... Hotel La Playa	Eureka..... Hotel Vance	Hayward..... Hayward Garage
Alvarado..... Reliance Garage	Carmel..... Highland Inn	Eureka..... Eureka Garage	Healdsburg..... Hotel Plaza
Anderson, Tillman Bros. Garage &	Carmel..... Carmel Garage	Fairfield..... Solano Garage	Healdsburg..... Central Garage
Machine Shop	Carrville..... Carrville Hotel	Fairmead..... Fairmead Garage	Healdsburg..... City Garage
Angela Camp..... Angela Hotel	Castella..... Crag View Hotel	Fair Oaks..... Fair Oaks Garage	Hollister..... Hotel Hollister
Angela Camp..... City Garage	Castroville..... King's Garage	Fall River Mills..... Pioneer Garage	Hopland..... Thompson's Garage
Antioch..... Brun's Garage	Chico..... Hotel Oaks	Felton..... Felton Hotel	Hopland..... Duncan Springs
Applegate..... Walmond Resort	Chico..... Chico Garage	Ferndale..... Ford Service Garage	Hood..... Lambert's Garage
Arbuckle..... Arbuckle Hotel	Chico..... Richardson Springs	Folsom..... People's Garage	Huntington Lake..... Hotel Netherlands
Arbuckle..... Almond Hotel	Chowchilla..... Chowchilla Hotel	Forest Glen..... Forest Glen Inn	Huntington Lake Lodge
Arcata..... Arcata Hotel	Cisco..... Cisco Hotel	Forestville..... Cash Garage	Ione..... Ione Garage
Arcata..... Plaza Garage	Clements..... Service Garage	Fort Bragg..... Fort Bragg Garage	Irvine..... Irvine Corner Garage
Arena..... Arena Garage	Cloverdale..... Cloverdale Garage	Fort Jones..... Scott Valley Garage	Jackson..... National Hotel
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Blairaden..... Feather River Inn	Cottage Grove..... Hotel Bartlett	Fresno..... Earl Jackson Garage	Lake County..... Blue Lakes Resort
Blairaden..... Mohawk Valley Garage	Cottage Grove..... Courtland Garage	Fresno..... Schultz Garage	Lake County..... Seigler Springs
Boyes Springs..... Boyes Springs Resort	Crater Lake, Ore..... Crater Lake Hotel	Fresno..... Smith Webb Auto Supply Co.	Lake County..... Stuparich Resort
	Crescent City..... Traveler's Hotel	Galt..... Midway Garage	La Honda..... Bonzagni Lodge
	Crescent City..... Crescent City Garage	Garberville..... Parker Hotel	Lake Tahoe..... Al Tahoe Inn
	Crockett..... Hotel Crockett	Garberville..... Garberville Garage	Lake Tahoe..... Glenbrook Inn
	Crows Landing..... Filippini Garage	Geyersville..... Pioneer Garage	Lake Tahoe..... Tahoe Tavern
	Daly City..... County Line Garage	Gilroy..... Gilroy Hot Springs	Lake Tahoe..... Tallac Hotel
	Danville..... Olsson & Bell Garage	Gilroy..... Barney Motor Co.	Lake Tahoe..... Fossil's Resort
	Davis..... University House	Gonzales..... Alpine Tavern	Lake Tahoe..... Fallen Leaf Lodge
	Davis..... Davis Garage	Gonzales..... Johnson's Garage	Lake Tahoe..... Homewood Hotel
	Delta..... Vollmer's Ranch Hotel	Grants Pass, Ore..... Oldings Garage	Lake View, Ore..... Consolidated Stage Co.
	Del Monte..... Hotel Del Monte	Grants Pass..... Josephine Hotel	Lakeport..... Fraser's Garage
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	Del Rey..... Del Rey Garage	Greenville..... Forest Camp	Latona..... Latona Garage
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	Dixon..... Rossi Bros. Garage	Grenada..... Grenada Hotel	Livermore..... Valley Garage
	Donner Lake..... Donner Lake Camp	Grizzly Bluff..... Weymouth Inn	Livingston..... Abbotts Garage
	Dorris..... Dorris Garage	Guerneville..... Guerneville Garage	Lockeford..... Lockeford Garage
	Downville..... Downville Garage	Gustine..... Anderson & Kerr Garage	Lodi..... Tokay City Garage
	Dublin..... The Dublin Garage	Hamilton City..... Hamilton City Garage	
	Dunsmuir..... Hotel Weed	Hammonton..... Goldfield Garage	
	Dunsmuir..... Big Brick Garage	Hanford..... King's Hotel	
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The back is 19 inches high and 17 inches wide; the seat is 17 inches square and the flap is 7½ inches by 17 inches.

Each piece is faced with a 2½-inch strip of high-grade Khaki material, adding to the appearance and also to the durability.

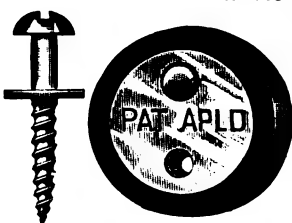
The reverse sides are covered with a strong but neat

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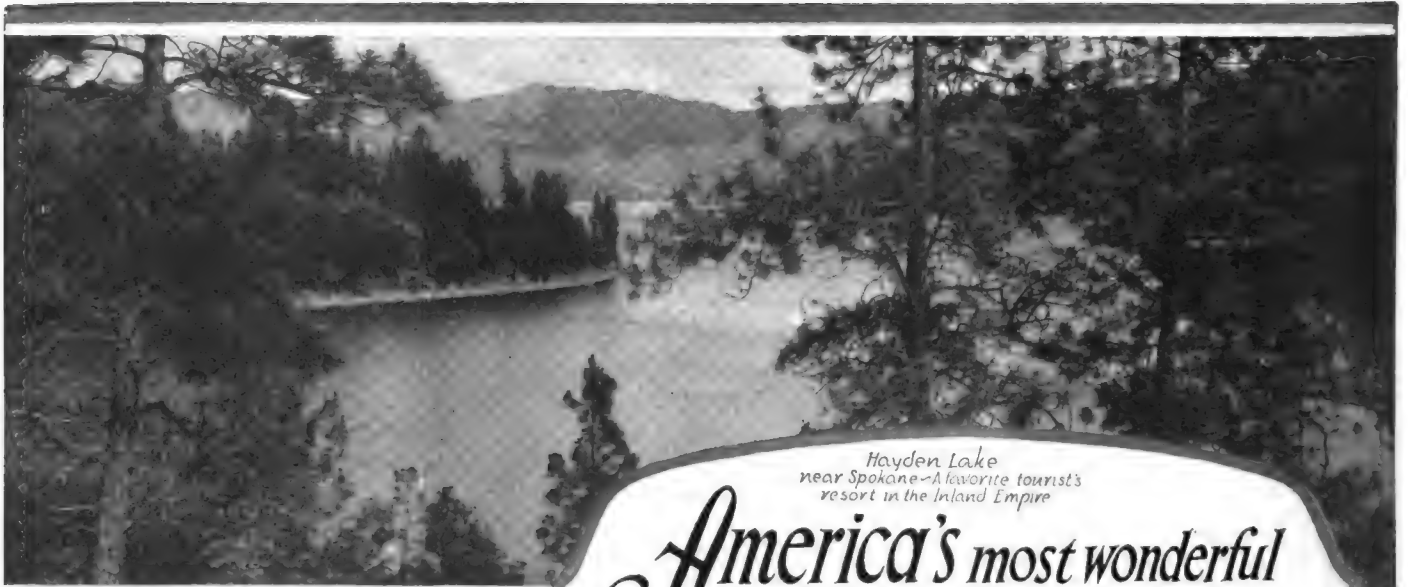
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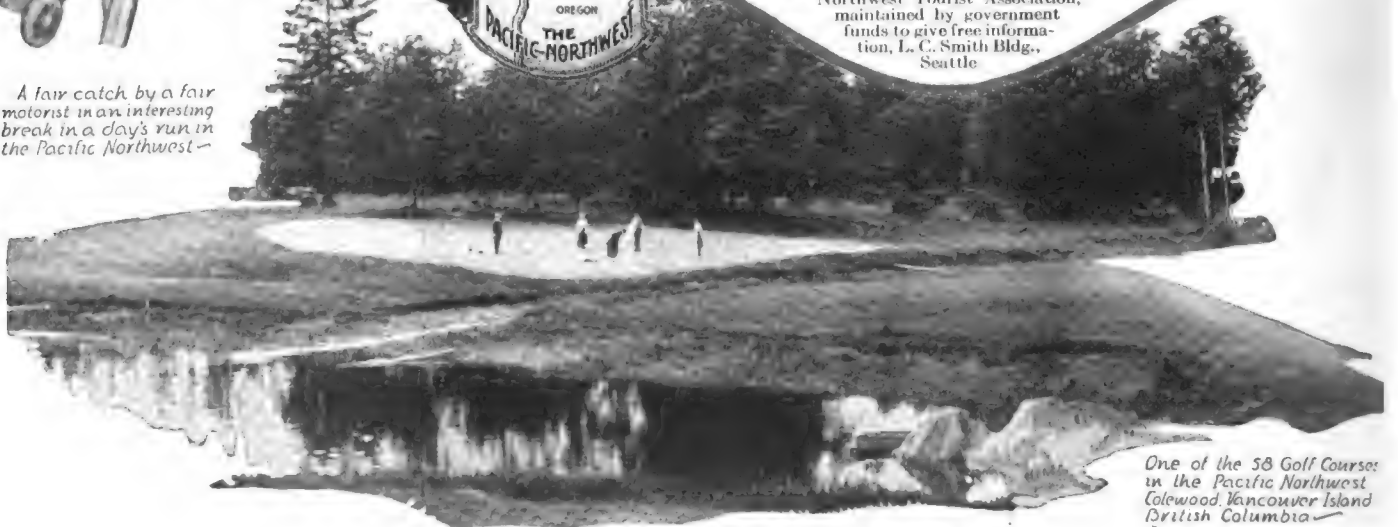
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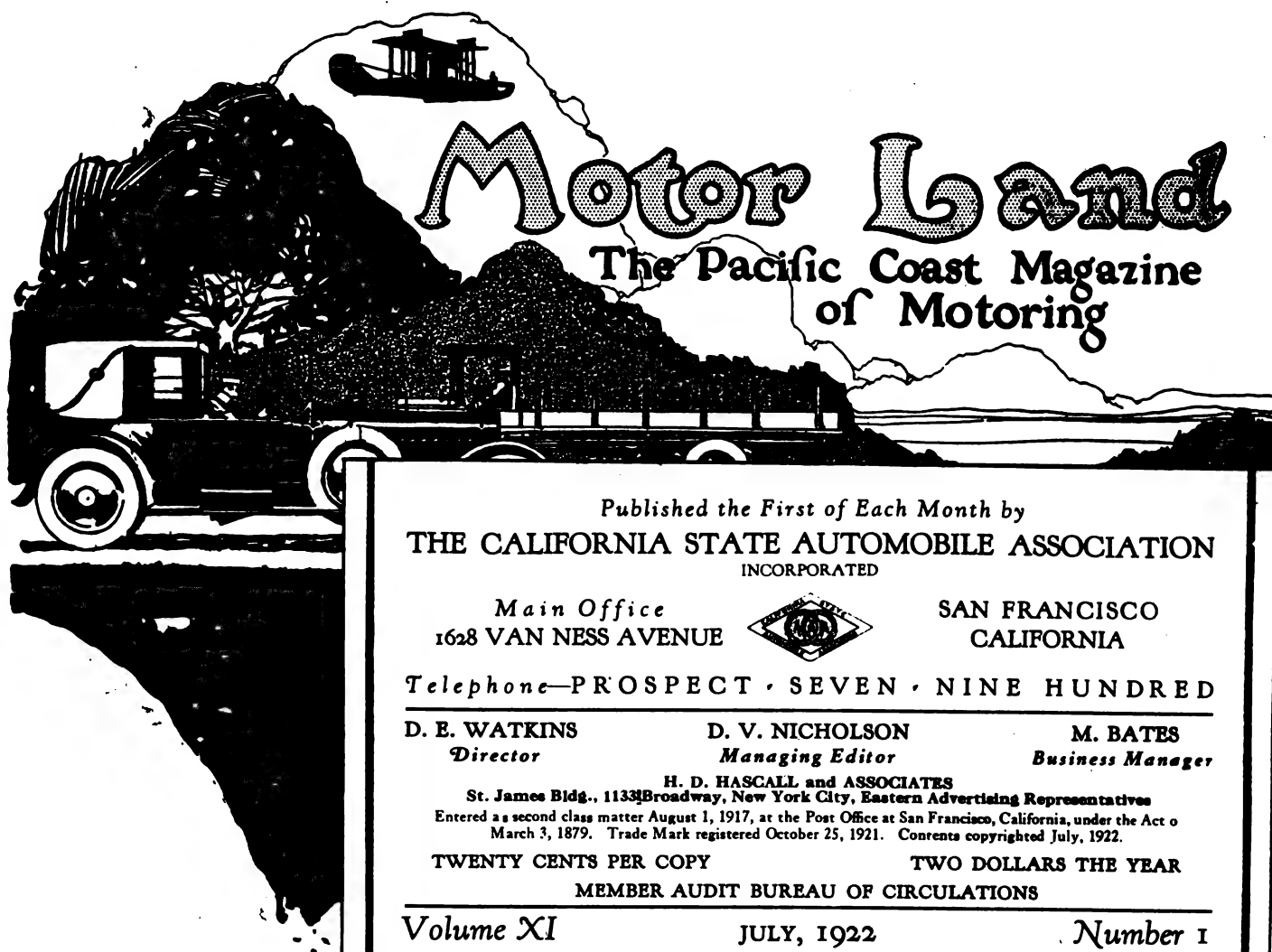
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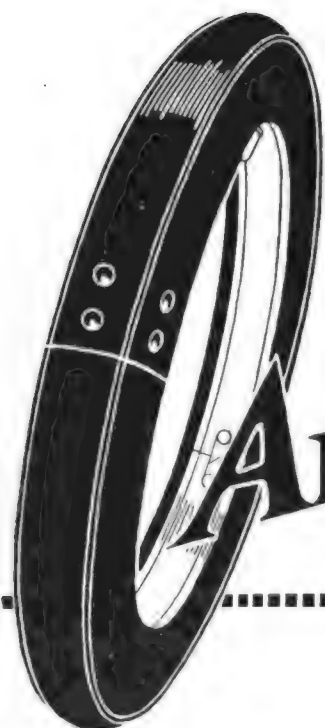
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Like a life boat on a liner, your spare tire is depended upon to bring you in when emergencies arise. And like a life boat, if it is not protected from the elements it fails of its purpose when needed.

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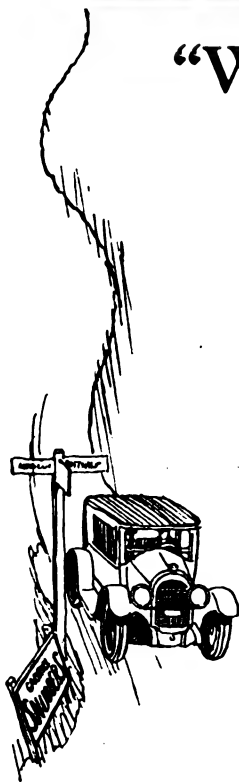
"Oh that's all right. Just so long as it's short I don't care how rough it is. Thanks."

You can take the short cut whenever you want to if your car is equipped with Gabriel Snubbers. They smooth out the rough spots.

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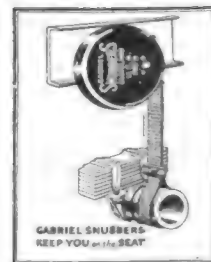
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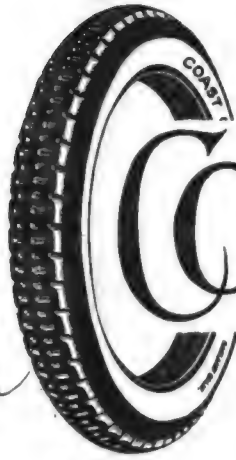
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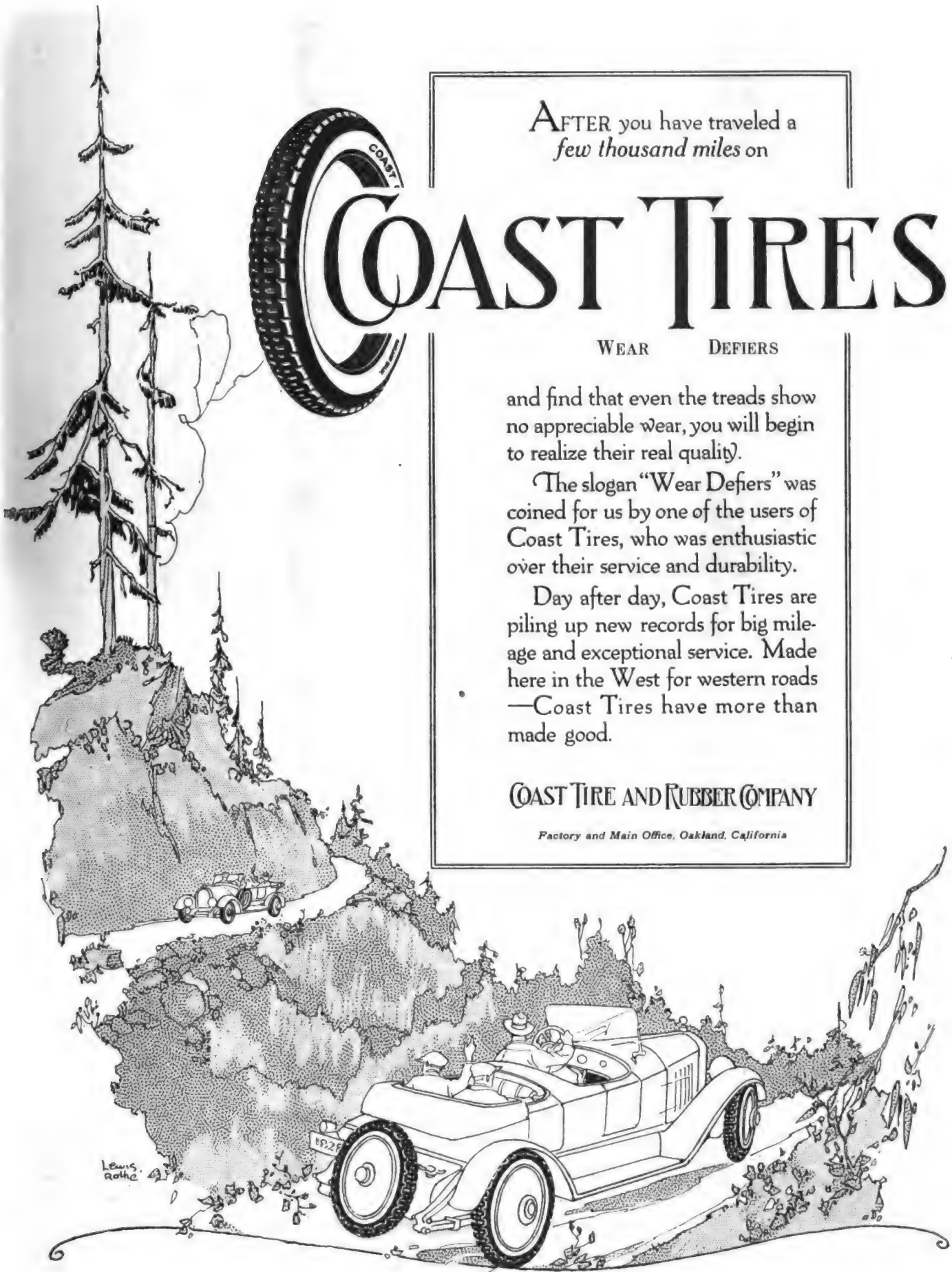
and find that even the treads show no appreciable wear, you will begin to realize their real quality.

The slogan "Wear Defers" was coined for us by one of the users of Coast Tires, who was enthusiastic over their service and durability.

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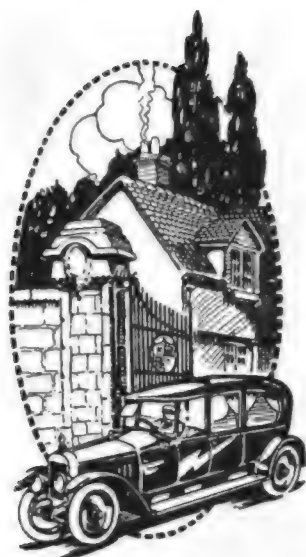
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CURRENT COMMENT



A Step Toward a Better Highway System in California

WITHIN the past two years and at a very considerable expense, the two automobile associations of California made an exhaustive investigation of the State Highway system and its administration. There was found much to praise and considerable to criticize.

A detailed report was made and published, not with an idea of embarrassing those in authority nor dictating to them the policies they should adopt, but rather to point out certain recommendations that were believed to be sound and needful of adoption in order that the most value should be received for the millions of dollars that were still to be invested in our State Highway system.

It seemed to be fitting that these recommendations should come from the automobile associations, for more than any other organization they represent the users of our thoroughfares and those who pay the cost.

That which was chiefly criticized pertained to thickness and widths of roadways and lack of experimentation.

It will be recalled that for many years subsequent to 1912 a thin and narrow pavement of a lean mixture of concrete was universally laid and recognized as the State Highway standard. The pavements were rapidly going to pieces and it was becoming daily more apparent that either there was a faulty design or traffic had not been properly anticipated.

As a result of their thorough investigations, the engineers of the two automobile associations made a recommendation that on the main trunk lines a pavement at least eighteen feet wide and six inches thick be laid. In many respects these recommendations have been proven to be sound and nothing points otherwise.

Pavements in other sections of the country laid with that minimum requirement have been found to give most for the dollar of investment; the United States Bureau of Public Roads insists on that requirement in all work here in California in which they participate and the Pittsburg experimental

tests have indicated the soundness of this logic.

But more gratifying than all else is the fact that all of the pavement now being constructed by the State Highway Commission is at least eighteen feet wide and upwards of sixty per cent of it six inches thick. This is a far departure from the old four-inch, fifteen-foot roadways of other days now being so rapidly covered up with reconstruction.

The State Highway Commission has ceased to have a standard and that is proper. The subgrade and traffic conditions in each particular case should be studied and the design made to fit.

With this rapid approach to the Association's minimum suggestions, the doing away with a State standard, more thorough study of subgrade conditions and participation in highway research work there is a great deal to be commended and this Association wishes to be the first to congratulate the Commission. A very decided step has been made in the direction of our hopes.

Broken Glass on The Highways

WHETHER it be due to an increase in the sale of bottles for some dubious purpose or a deterioration in the resistance power of glass products, our city streets and our highways are continually being littered up with broken crystal, the foe of the automobile tire.

If you have an accident, a broken lens or a broken windshield, see that the glass is not allowed to remain on

the road as the source of trouble for the cars that come after. It means only a few minutes' time to remove the litter immediately, while, if it is allowed to remain, it is a constant menace to traffic.

Broken bottles and window panes thrown on the streets may be the cause of serious accident. Whenever debris of this sort is encountered, communicate with the street department

at once if it is discovered within the incorporated limits of a town, and with the county engineer's office if it is found on the county roadways.

Co-operation of all motorists to keep our highways clean and safe for touring is essential to the successful working out of the safety first idea. Do your part and see that the other fellow does his. It will make the world a far better place to drive in.



Where a portion of the Golden Gate Highway would be located.

THE GOLDEN GATE HIGHWAY

A Route That Would be One of the Most Picturesque Highways of the West!

By C. C. COTTRELL

Manager Good Roads Bureau, California State Automobile Association

THE Golden Gate Highway! What an appeal that would make to every Easterner visiting the West and what a thrill of pride it would give to every Californian to know that the famed Golden Gate could be viewed from one of the most picturesque highways of all the West.

The wonder of it all is that there is no Golden Gate Highway now, for the possibilities are there in a degree that cannot help but surprise those who have dreamed of a real scenic highway in Northern California. And the obstacles that will have to be overcome to make it a reality are so small that it is hard to comprehend why San Francisco has not before grasped the opportunity to show that which everyone wants to see—the Golden Gate, with all its magnificence and historic interest.

Recently a party of officials of the California State Automobile Association

consisting of President George S. Forderer, Secretary-Manager D. E. Watkins and the writer made an automobile reconnaissance of the bay and ocean shore from the foot of Van Ness Avenue to Sea Cliff. Those men, who thought they were familiar with every highway and byway in Northern California, were startled to find that it was possible even now to drive most of that distance in a machine; they were astounded at the magnificence of the view obtained from every foot of the way and in every direction, but, more than all else, they were surprised to find how easy it would be to make this shore line a wonderful scenic drive.

A Real Golden Gate Highway

Needless to say they came back full of enthusiasm over what they had learned and are now, as any one would be making the same trip, ardent

boosters of a real Golden Gate Highway.

There is much we of Northern California have to learn of our own State. We flatter the people of other communities with our praise of their Columbia River Highway, the road through the Palisades along the Hudson, or the one to the top of Pikes Peak. Those highways are famed far and wide and every one visiting those communities should, and 'most always does, grasp the opportunity of traveling over them.

It took many things to build those roads, energy and men and money included, but the greatest propelling force of all was vision. To those men who first pictured in their minds the value of a facility, a modern highway, to easily and properly view the beauties and wonders of nature, must always go the glory of planning something worth while. Who is it that would

say any of the famed scenic roads of our country did not make this a better place in which to live? Or who is it that can help but praise those whose forethought made such wonders of nature available to the eye?

Lacking in Vision

Yet we of California have lacked vision, for we have within our bounds an attraction as appealing as any elsewhere—one that not only fills the eye with a magnificent and awe-inspiring view, but one that is filled with an historic interest as well. It is a common fallacy of our lives that we laud a stranger more than one of our own or rave over a view in a distant clime not the one half so good as one at home.

California should be proud of its Golden Gate—that little narrow neck of water less than a mile wide which has shaped the destiny of all this Western country in which we are all so proud to live.

One could stand for hours at Old Fort Point in rapture, wonder and reflection. To the north across the channel are the hills of Marin, typical of all other California hills, standing there as a formidable barrier between an ever restless sea and the quiet woods and dales at the foot of Mount Tamalpais. Towering above all the surrounding country and looking far out to sea, this grand old mountain seems to be a sentinel, ever watchful that no harm or destruction shall come to any of the wonderful country of which it is the center.

To the left one can look far out over the ocean and on a clear day see the Farallones — jagged rocks almost twenty-five miles away. Directly in



Old Fort Point and the Golden Gate.

front is Lime Point, marking the northern side of Golden Gate. It appears so white and so close and so inviting that one feels that he can easily reach across to the other side.

Alcatraz is on the right and, in spite of all the sorrow and tragedy of men's lives that it harbors, is a beautiful site to view.

Everything about the Golden Gate is pleasing, yet so jagged and so abrupt that one expects a racing sea and is not disappointed. Here it is that the waves and swells of the ocean meet in constant combat the still waters of the bay, fresh from the melting snows of the high Sierras, and through all the

fray the tide regularly ebbs and flows.

No one can stand for long and view the Golden Gate without thinking of the past and the venturesome spirits that first sailed through it when it was still an uncharted entrance to an unknown land. One's thoughts run back to those days of not so very long ago when the eyes of all the world were upon California's gold and to the shiploads of seekers of wealth, weary after a long trip around "the Horn," or fever stricken after having crossed the Panama Isthmus.

What thoughts those men must have had and what hopes as they entered the Golden Gate of a Golden Land!

Today one sees modern ocean liners in place of the frail craft of only yesterday and wonders from whence they came or whither bound. Even as in other days one knows that thoughts run fastest and emotions are greatest to those passing through the Gate. One wonders what cargoes are carried and what mischief aboard. Truly it is a spot for reflection!

The Commerce of a Nation

Through this little neck of water there flows the commerce of a nation. It has been the reason for the building of cities and determined the location of railroads, and yet withal its beauty, its appeal and supreme importance we hardly know it.

From the foot of Van Ness Avenue it is possible for one to motor to old Fort Point. It is possible, for there is a connected roadway all of the distance of three miles—some of it good and some poor, still the location is there and it would not be a difficult matter to construct a modern roadway. Just



The commerce of a nation flows through the Golden Gate.

before reaching the old fort there is a wide throughfare built sometime in the past along the bay shore at a very great expense and which would be utilized for this wonderful highway project.

Beyond Old Fort Point for a distance of about a mile and a half there is no roadway along the shore line and there is where the delightful scenery lies. The very ruggedness of the country that makes it so picturesque has disheartened the ones who would build a highway. But a closer examination by those used to solving problems of the kind reveals the fact that it would not be so difficult after all. The location can easily be made and the material is not difficult to move. A wide modern pavement can be built along this distance for less than a hundred thousand dollars.

Another mile and a quarter of roadway now in existence brings one through Lincoln Park to Geary Street, marking a real Golden Gate Highway six miles long. The accompanying map shows its location—the dotted line meaning the necessary new construction.

Within the Presidio

Practically all of the highway is within the bounds of the Presidio, as a consequence of which the necessary authority, easements, leases or what not would have to be obtained from the War Department. It is hardly conceivable that they would hesitate to grant these.

A layman would say that the highway would in no way interfere with any of the fortifications, but on the other hand that it would be of considerable value to the military authorities in maintaining their reservation.

There is hardly a question but that the City and County of San Francisco has the authority to build the road even though it would pass through Government land. If there is any doubt it is merely a matter of the legislature amending the charter.

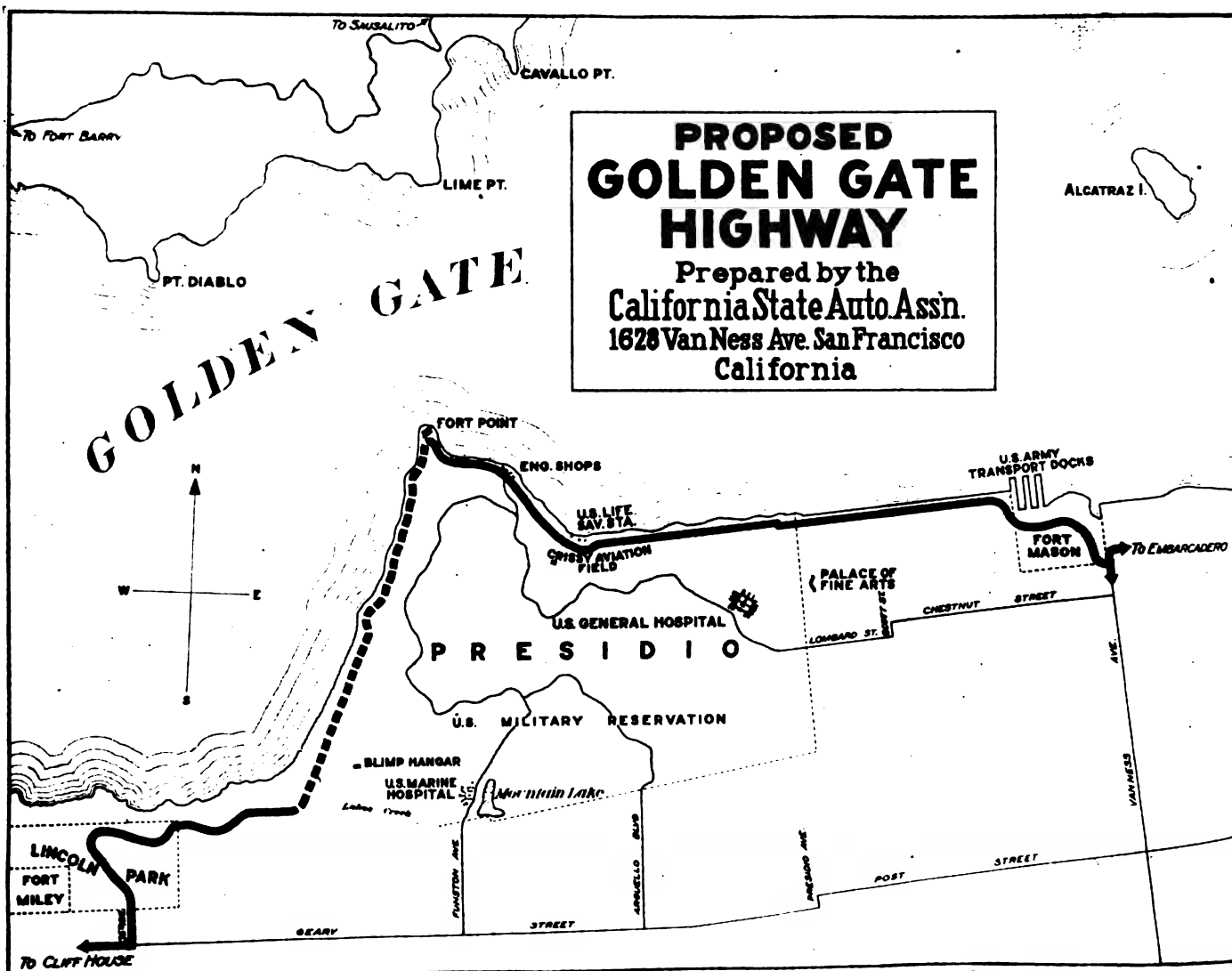
In another particular way the project should make an appeal. Every small unit of its construction can be utilized and will be immediately it is completed. In that way some of the work can be done now, a little more later, and so on until the dream of pass-

ing over the entire highway is realized.

California is used to big undertakings and so is San Francisco. We go miles and miles away for our water supply, a task that will shortly call forth the admiration of the world. We have rebuilt an entire city within a shorter space of time than was ever believed possible and we are proud to show it to our visitors from our own Twin Peaks Boulevard.

Everything cannot be done at once—we are a new country. Yet possibly the one thing of which the people of the East have heard the most and for the longest time is the Golden Gate. That and the waterfront are the first things they want to see when they get here—ask any of them. The appeal is at every fireside in the East and Middle West.

And yet when they get here—into this land of their dreams—the one thing of which they have heard so much and which was in all their school books when they were youngsters cannot be viewed except at an unsatisfactory distance for the want of this very facility—the Golden Gate Highway.



THE ABUSED CAR PROBLEM

A Tip to Motorists Who Hold Cars in Anticipation of Normalcy in the Used Car Market

By FREDERICK C. RUSSELL

WHILE automobile manufacturers and dealers are worrying over the task of disposing of used cars it might be a good idea for motorists to face squarely the abused car problem and see what can be done about it. The low prices which used cars are bringing are mainly the result of price cuts on new cars and general conditions of supply and demand, but the abused car problem has a very direct bearing on low valuation which many car owners do not seem to appreciate.

This relation between the two problems will become more pronounced as business conditions improve. Just at present cars of certain makes and models seem to be worth just so much in a "trade in" and little more. Dealers stand rather pat on their agreement to abide by rules and regulations governing allowances, and this has a tendency to reduce all offerings to dealers to a common level, regardless of the treatment the cars have received. Used car dealers follow in the footsteps of the dealers in new cars and can hardly be induced to raise their bids more than fifty or a hundred dollars even if the owner proves beyond a doubt that the car is in exceptionally good condition.

The Problem of Resale

When it is a question of reselling these cars, however, the price tags begin to vary widely as the conditions of the various offerings become apparent. Were the original owners to try to buy back their cars, values would show a decided increase, but this is of little consolation. It is a fact, however, not to be overlooked, because it proves that in the final analysis the treatment a car receives still influences its value in the used car market, though at present the seller is induced to believe that the car's condition is of secondary consideration. Prevailing conditions overestimate the sentimental depreciation occasioned by yearly or model change and the advantages of a new car over an old one, but the time is fast approaching when the used car will come back into its own with allowances based upon actual intrinsic value.

What, then, are you as a car owner doing to guard your investment? Sooner or later the abused car will have the floor as the chief automotive problem, and there will be nobody to blame for it but the car owners themselves. Thousands of motorists are holding their machines a while longer in anticipation of the inevitable return

to normal values in the used car market but they are making the mistake of regarding their machines as "old cars" and are doing nothing to conceal evidences of age.

Fountains of Youth

A point which very few car owners consider is that there are many fountains of youth to which cars can be taken for rejuvenation. A car doesn't necessarily wear out in direct proportion to its age or the amount of service it renders; age seems to be very largely measured by the treatment it receives. Some of the best conditioned cars on the streets are those which have traversed 25,000 miles or more. The idea that a car is only young once is about as antiquated as the idea that a modern woman is old at fifty.

There are so many both useful and ornamental accessories being offered on the market that the owner of an old car can keep up with changing styles by the occasional addition of a new fitment. Scratched splash pans can be concealed by the addition of aluminum kick plates to the running boards. Door handles can be re-nickeled without interfering with the use of the car. And old tires can be painted with preservative material or beautified with tire covers. In a similar way it is not only possible to make amends for every mark of depreciation but to actually enhance the car's appearance.

A car does not have to be periodically repainted to keep it looking right. If the trimmings are in good order and the car itself kept clean it will pass muster even though its finish does not shine like new. Given good lines and features to start with and a body that is kept clean, the car with a few years of service to its credit will get along just as well—if not better—than a sparkling new one, for it will be known as a machine that keeps youthful by keeping useful. Any car can be young once, but it takes a wise owner to remove the marks of age and turn back the years.

Attention to Appearance

Attention to appearance, however, is not the most essential point to be remembered in one's personal attempt to forestall the abused car problem. Appearance always has been and always will be an important influence in determining the value of a used car because the buyer always reasons that if the externals have been neglected the same may be true of the internals,

but since motorists have come to appreciate the importance of looking under the hood when buying new cars it is safe to predict that this habit will become more and more evident in the buying of used cars. All of which means that in addition to keeping a car always looking like what it is, it is equally essential to keep it running as well as it looks.

This is not an easy task because all car owners do not know what is right and what is wrong in the operation and care of the machine's mechanical units. Almost any car owner can see that excessive washing of the wheels is chipping off the paint, but few are likely to know that slipping the clutch so as to remain in "high" while running slow in traffic is aging that unit excessively. Not one driver out of a hundred realizes that when he absent-mindedly drives with the choker half way out he is filling his engine with carbon which lodges around the valve seats, holds the valves open and warps them.

Certain forms of car depreciation are self-evident to any conscientious motorist while other evidences of abuse do not become apparent until the prospective buyer lowers his offer because some unit of the car proves faulty. The motorist who is holding his car in anticipation of better conditions in the used car market had, therefore, better review his method of driving, his system of greasing and his regularity of chassis inspection. This applies to the man who thinks he is doing everything strictly according to Hoyle. The automobile is too complicated a piece of mechanism for any one driver to know exactly the best way of treating every part of it.

Use of Lower Gear

For instance, there are some motorists who think it is good policy to drive with valve tappets very close and carburetor adjusted for a very lean mixture. They claim both economy and quietness of operation, and argue that even if it is necessary to resort to second speed on hills it saves straining the engine. The argument that generous use of second speed saves the engine has been advanced so often that motorists who are convinced of it entirely overlook the fact that generous use of the lower gears also means excessive wear of those parts. Installing new counter-shaft gears in a transmission is frequently more costly than tightening engine bearings or even inserting new wrist pins; and a noisy

transmission is oftentimes more of a drawback to the sale of a car than a knock in the motor. It is necessary, therefore, in using a car to be careful not to abuse any one unit of it in order to save normal wear of another.

Much permanent damage has been done to cars through failure to keep spring clips and bolts securely tightened. Particularly is this true of cars of the Hotchkiss drive type in which the body and chassis "drive" as well as the torque (or twisting motion of the propeller shaft) is taken through the rear springs. If the springs are neglected in this way the driving strain will be diverted through other parts of the car which were not intended to carry it, thus resulting in misalignment of parts and distortion of the body. All these things show up when the car is offered for sale; and the sale price is lowered accordingly.

Many a driver who changes the engine oil every thousand miles fre-

quently forgets to grease the universal joints. Or perhaps the clutch throw-out collar may be the neglected member. This means car abuse. To guard against forgetting some less accessible part it is a good plan to make a list from the oiling chart of the various parts of the car which need greasing. Mark beside each how often (in miles) it needs attention. Then keep track of the "mileage dates" when the parts were last attended to. This tells the owner at a glance whether he has forgotten any part and just which part it is.

Unintentional Abuse

I have proceeded in this article on the assumption that abuse of cars is for the most part unintentional, which as anyone knows is about as far wrong as assuming that all automobile accidents are unavoidable and not the result of carelessness. I have presented the subject in this manner for the purpose of impressing upon those motor-

ists, who wilfully neglect and abuse their cars, the fact that even if a man conscientiously endeavors to give his car good treatment he is up against a hard fight from the very beginning because of the complexity of the machine he is trying to care for. The conclusions which the careless car owner should draw from this fact are obvious.

But good treatment of a car is not only its own reward but money in the owner's pocket, all the way from the time he takes his first trip to the day he offers the machine for sale. I might easily have dwelt upon the pangs of heart and pocketbook which many car owners will experience when their cars are judged upon true values in the coming normal used car market, but I have tried to follow the more constructive procedure of offering a few suggestions as to how a sensible owner can solve his own angle of the inevitable abused car problem.

GOVERNMENT AUTHORIZES \$190,000,000 FOR ROADS

FEDERAL aid for road construction will be continued as a result of the authorization of additional appropriations for this work amounting to \$190,000,000 carried by the Post Office appropriation bill signed by the President June 19. Fifty million dollars is authorized for the fiscal year beginning July 1, this year; and \$65,000,000 and \$75,000,000, respectively, are authorized for each of the two succeeding fiscal years. In addition, \$6,500,000 is authorized for forest roads for each of the two fiscal years beginning July 1, 1923, and July 1, 1924. The funds will be administered by the Secretary of Agriculture through the Bureau of Public Roads.

The apportionment to be made to the various States is approximately as follows:

Fiscal Year Ending 1923			
Alabama.....	\$1,035,614	Nebraska.....	\$1,054,126
Arizona.....	702,188	Nevada.....	635,624
Arkansas.....	836,095	New Hampshire.....	243,750
California.....	1,641,399	New Jersey.....	628,581
Colorado.....	894,117	New Mexico.....	793,216
Connecticut.....	320,599	New York.....	2,464,299
Delaware.....	243,750	North Carolina.....	1,139,556
Florida.....	591,217	North Dakota.....	776,476
Georgia.....	1,331,972	Ohio.....	1,882,003
Idaho.....	625,691	Oklahoma.....	1,168,226
Illinois.....	2,164,187	Oregon.....	788,443
Indiana.....	1,305,904	Pennsylvania.....	2,265,969
Iowa.....	1,401,915	Rhode Island.....	243,750
Kansas.....	1,401,521	South Carolina.....	707,492
Kentucky.....	944,786	South Dakota.....	802,707
Louisiana.....	664,660	Tennessee.....	1,098,461
Maine.....	463,440	Texas.....	2,950,115
Maryland.....	427,086	Utah.....	566,278
Massachusetts.....	730,784	Vermont.....	243,750
Michigan.....	1,499,688	Virginia.....	971,219
Minnesota.....	1,415,731	Washington.....	735,806
Mississippi.....	863,271	West Virginia.....	534,906
Missouri.....	1,632,096	Wisconsin.....	1,263,211
Montana.....	1,031,257	Wyoming.....	623,078
		Total.....	\$ 48,750,000

These funds must be matched by the States and will be administered subject to the general provisions already in force.

The new legislation reduces the maximum participation on the part of

the Government from \$20,000 to \$16,250 per mile for roads constructed with the appropriation for the next fiscal year and \$15,000 per mile thereafter. Bridges over 20 feet in span may be considered as separate projects to which this limitation does not apply. In States where more than 5 per cent of the area is unappropriated public land, provision is made for an increase in the amount per mile. The act also provides for the extension of Federal aid to the construction of structures required for the elimination of railroad grade crossings.

Important provisions of previous acts under which large funds have been successfully administered are applicable to the new funds. States must maintain adequate highway departments. Funds to match Federal aid must be placed under the direct control of the State highway department. The type of surface constructed must be adequate for the traffic anticipated, with reasonable grades, curves, and other features. States must obligate themselves to maintain all Federal-aid roads constructed, and in case this is not done any Federal funds available for new projects may be withheld until they are put into satisfactory condition. All Federal-aid funds must be spent on a connected system of roads consisting of not more than 7 per cent of the total mileage in each State and divided into primary or interstate roads and secondary or inter-county roads.

Plans Received From 40 States

Plans for the proposed system have been received by the Bureau of Public

Roads from all but eight States, and the State systems are being co-ordinated so that when joined together they will serve the best interest of the whole country. In the meantime only projects certain to be on the proposed system are being approved.

The new appropriation comes at a time when several States are nearing the limit of funds available. The authorization of funds for three years in advance will be of great benefit to all States in that it will permit them to lay their plans for some time ahead. Uncertainty as to future Federal aid is removed and provision can be made at once for raising State funds to match it.

What the new fund will mean to the country can be judged by the use that has been made of the \$350,000,000 previously appropriated. On May 31, 17,000 miles of road had been completed, and, in addition nearly 14,500 miles were under construction. Federal-aid roads in all stages total nearly 38,700 miles, involving over \$287,500,000 of Federal aid. To match this fund, the States have appropriated approximately \$380,000,000, making a total of \$667,500,000.

All types of road have been constructed with Federal aid to meet the varying conditions in the United States. The average cost per mile has been \$17,120, and Federal aid has amounted to 43 per cent of the total cost.

It is estimated that the \$190,000,000 lately authorized will result in the construction of more than 25,000 miles, which with the 46,000 miles from previous appropriations makes a total of 71,000 miles, or nearly 40 per cent of the estimated 180,000 miles of road.

MILADY MOTORIST

Bewildering Variety of Fabrics for Midsummer Clothes

By EDITH M. GARFIELD

IN THESE hot midsummer days it is difficult to keep the weather out of conversation, and hotel and country-club veranda gossip is punctuated with apt remarks about the humidity, or the breeze that didn't stir the night before. When the mercury is high, it becomes increasingly difficult to maintain a strenuous out-

afternoon or street wear there are delightful printed crepe silks—and for evening there are fascinating adaptations of lace. Of course this little list does not include all the varieties of fabrics we have to choose from—for never have there been such bewildering selections. But these three seem to be the most popular, especially when a practical wardrobe is a necessity.

For instance, on the summer tour, a smart little sport suit or one-piece dress of *éponge* solves the problem nicely of a cool, in-

destructible and exceedingly good-looking traveling costume. It does not wrinkle easily and rarely shows the dust. Of course, midsummer traveling clothes are a different breed from the traveling clothes of the rest of the year.

And then at the resort hotel—and probably the trip will be broken by

Coolness, slimness and charm are bound up inseparably in this two-piece sport costume of pure silk knitted in an attractive weave, and brightly bordered with Neapolitan stripes to give a color note to the tan background. The brim and band of the youthful hat are bound in wool of the same colors of the stripes on the suit, and a wool flower fancy is appliqueed.



An ideal traveling costume is this affair of alpaca knitted with contrasting fibre-silk stripes. It's just a skirt and sweater jumper, worn with a hip-length cape, which features a throat scarf, fringed of course. All models—Bonwit Teller Co., New York City.

door life unless attired in clothes of the very coolest and least hampering nature. We can't give up our sports and we can't play golf or tennis or motor in the chiffon raiment of devotees of the Terpsichorean art, and so a great deal of thought and not a little genius is expended in the selection of summer togger.

There are three fabrics that are particularly popular this season—and an entire wardrobe could be contrived from just these three mediums. For general sport wear there are those lovely *éponges*—for



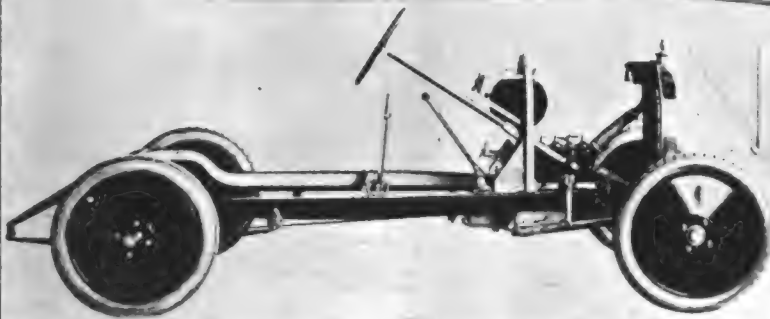
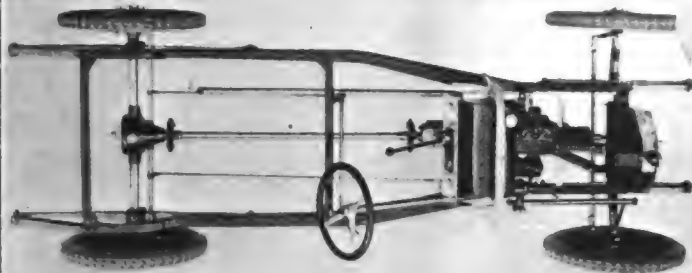
Light and cool as a summer breeze is this dainty frock consisting of a sur-tote overblouse of crepe de Chine with hand-drawn work and a closely pleated skirt of the same material. It comes in all the season's favored shades.

short stops at places like this—simple little daytime dresses of printed crepe silks leave nothing to be desired for coolness and daintiness. For the woman who stays in town these winsome little frocks in darker shades are the perfect town costume. They pack delightfully, too, for at the end of a journey just a little shake and a few minutes' hanging up smooth out all the wrinkles that cannot be avoided.

In the World of Motordom

The latest in baby buggies, or—as our English cousins call 'em, "Prams"—the "Pramotor," just put on the market by a London concern. This new perambulator is propelled at a speed of four miles per hour by a small gasoline engine which is fixed to an extra wheel attached just behind it. The nurse stands on footboards placed on either side of the propelling wheel. Comfortable springs and large pneumatic tires prevent vibration.

—Copyright, Underwood & Underwood.



The world's smallest automobile is a Mathis—built in France—with a tiny four-cylinder engine which a man may readily carry, since it weighs no more than 100 pounds. It will run more than 60 miles to a gallon of gasoline. While it is only rated at eight horsepower it is a standard machine in every respect. It has an electric starting and lighting system, a plate clutch and a four-speed transmission.

Claimed to be the world's first jazz-car, this little automobile nightly takes a terpsichorean fling on the polished floor of the dance pavilion at Ocean Park, California. The operator simply speeds his car, then slaps on the brakes, and the slippery boards do the rest. To "Chicago" or "shimmy" one simply cuts the motor wide open but keeps the clutch disengaged, of course. Miss Arline Langan is the courageous girl who rides the hood.

—Copyright, Underwood & Underwood.



A Trio of Beauty Spots

Parliament Buildings, Victoria, B. C., Capital of British Columbia.



Mount Rainier, Rainier National Park, as seen along the Pacific Highway in Washington.



Crater Lake, whose walls range from 1,000 to 2,000 feet above the surface and whose waters are of unfathomable depth. The lake is reached from the Pacific Highway at Ashland and Medford, Oregon. The phantom ship is seen in the center of the picture.



THE HIGHWAY OF THE PACIFIC SHORE

Road from Mexican Border to Vancouver Traverses Lands of Beauty and Wealth

THERE are not many Californians who realize that they are at one end of the greatest highway in the world. This white ribbon of a road leads from the Mexican border away up into the city of Vancouver in the Province of British Columbia, 1650 miles—and beyond. This highway is great, not simply because of its length, but because of the country it traverses and the magnificent scenery through

which it runs. There are no other highways like it or to be compared with it. It is particularly a product of the Pacific Coast States and an evidence of the progress and development that has taken place on the Coast during the past twenty years. It links together three states in the Union and one province in Canada and is therefore international in its character.

The whole 1650 miles of this great

white ribbon is paved or is under contract to be paved (with the exception of 237 miles) and this is again unique in regard to highways.

Economic Value

One can hardly appreciate the economic value of this road for business and commercial reasons. It is bringing these states and communities

(Continued on page 32)

BRINGING A BALKY ENGINE TO LIFE

It's Easy to Discover the Trouble if You Use the Right Method

By HAROLD F. BLANCHARD

WHEN the engine refuses to go it is usually easy to discover the trouble and remedy it if the right methods are employed. The causes of a balky engine are almost invariably trifling ones. Once the defect is located it generally takes about a minute to rectify it.

Sharp eyes and a little common sense are worth a lot more than profound technical knowledge. As an illustration of this point, it has been demonstrated time and time again that the motorist who knows very little about the theory of the operation of a gasoline engine, will lift up the hood and scan the interior carefully, fumble around a moment and unearth the trouble. Whereas, an expert proceeding along more logical lines may spend considerable time in determining the trouble. Working according to the law of averages, the first thing to do when the engine refuses to go is to see that the ignition switch is on. Failure to turn on the ignition switch has caused more starting difficulty than any other one thing. Accidents of this sort were very common in the days when cars were hand cranked. But now with self-starters the switch is usually visible from the driver's seat and mistakes of this character are not so frequent, at least in the day time. But at night, unless the instrument board is provided with a light, it is quite possible to overlook turning on the switch.

The Next Thing to Do

The second thing to do is to see that there is sufficient gasoline in the tank, for this is the cause of more balky engines than any other one thing, perhaps with the exception of failure to turn on the ignition switch. Therefore, regardless of how full the tank is supposed to be, it is a good plan to be sure that there is gasoline. It is not safe to assume that there is gasoline. It is necessary to look. There are many instances where owners were sure that lack of gasoline was not the cause and, after spending considerable time, they discovered that it was the cause.

In determining whether there is fuel or not first tickle the carburetor, and if it floods, it may be assumed that the carburetor is full of liquid. Sometimes it happens, however, that this liquid is largely water. Therefore it is advisable to drain off about half a teacupful if there is a convenient cock below the float chamber. If there is no liquid in the float chamber, the gauge in the gasoline tank should be examined. It

may show empty even though the tank was filled the previous day, or at least the last time the car was used. It is worth pointing out here that gasoline tanks sometimes develop slow leaks, and where the car is allowed to stand over night or for several days, the leakage is sufficient to drain the tank. This possibility, by the way, is a good reason for inspecting the gasoline tank level every time the car is taken out.

If vacuum feed is employed, an empty tank should not interfere with the starting of the engine unless the carburetor also leaks. If the carburetor does not leak there should be sufficient supply in the vacuum tank and in the float chamber of the carburetor to permit starting of the engine. On the other hand if there is dirt under the float needle or if the float needle needs grinding or replacing, it is possible that in the course of a few hours, gasoline will leak out.

A Clogged Feed Pipe

A gasoline tank may be full and yet gasoline will not flow to the carburetor. In this case it may be assumed that dirt has clogged the feed pipe. This defect may be remedied by removing the pipe and running a wire through it with a rag on it. Or if this is not possible compressed air should be used to blow the dirt out, and if no compressed air is available blow into the pipe. A rag, and not cotton waste should be used to swab out the pipe, as the lint from waste is likely to clog the jets in the carburetor later.

The lack of gasoline may be due to the fact that the vacuum tank is not in working order. This in turn may be caused by air leakage in the pipe running from the manifold to the vacuum tank. Or it may be that there is something wrong with the mechanism. In this case it is advisable to have the mechanism examined by a competent repairman. In passing it is worth noting that if raw gasoline is sucked through the pipe running to the intake manifold from the vacuum tank that the trouble is probably caused by the air vent to the tank being clogged with dirt.

Sometimes the engine may refuse to start because of lack of gasoline, even though there is fuel in the carburetor. In this case it is probable that the low speed jet on the carburetor has become closed by dirt. If this is suspected to be the fault the engine should be primed with gasoline, in which case it should start running, although it may stop after a few explosions. Priming the

engine, by the way, is a very easy method of determining whether the trouble is in the carburetor or in the ignition system. If the engine will run even for three or four explosions after being primed, it is almost positive proof that the trouble is not in the ignition system, but is to be found somewhere in the gasoline system.

Tests for Ignition

It is not advisable to make all the tests described before looking in the ignition system. In fact when the engine refuses to start, the first thing to do is to see that the ignition switch is turned on and then see that there is gasoline in the float chamber. The next step is to give the ignition system a hurried inspection. First see that the wires are in place. Occasionally a wire drops off. If such is the condition the wire should be replaced, and in all probability the trouble will be cured. Next look for defective insulation. It is advisable to run the fingers over all the wires in the low tension system, keeping a sharp watch for insulation which may be worn or broken, so that current may leak to the metal parts of the car. Next, examine the high tension wire running from the coil to the center of the distributor. It is advisable also to examine the terminals of all these wires to see that they are bright and clean, and that the terminal nuts are securely in place. Wire terminals should also be carefully examined, for stray loose strands which may be grounded. The average ignition wire used on an automobile is made up of numerous fine strands, and if even one of these strands touches an exposed metal part, the engine is likely to balk.

It should not take more than a minute to perform this examination, in most cases at least. If no faults are found, the distributor cap should be removed, and the breaker examined. If the breaker mechanism and the distributor brush seem to be all right, the cap may be replaced, although in doing so it is advisable to wipe it carefully inside and out, particularly if the car has recently been washed, or been exposed to a heavy rain storm, as even a drop of water on the exterior of the distributor cap has been known to stall the engine.

A Little Detective Work

The methods described so far are not arranged in their logical order. The procedure outlined cannot be likened

(Continued on page 36)

SWITZERLAND, THE MOTORIST'S PARADISE

Barriers to Motor-Car Travel in Alpine Regions Finally Removed

By MARIE WIDMER

A SHORT decade ago Switzerland could have been likened to a Garden of Eden where the automobile was more or less the forbidden apple in nature's choicest realms. Rigid rules and regulations checked the motorist's every movement, and those grandiose Alpine

passes whose history dates back to the Roman era, those enchanting mountain vales where admirers of beautiful scenery love to pause in wonder and adoration, all were closed to occupants of automobiles. Henceforth, if one did not wish to do one's sightseeing on the average main roads only, it was hardly

of any use to take a car into the land of the Alps.

But Switzerland has undergone a complete metamorphosis. The peasants, formerly so averse to motor cars, have acquired a broader outlook on the demands of modern life and gradually, by popular vote, they themselves

Post-automobiles have been introduced on many of the Swiss Alpine passes, replacing the picturesque diligence of former days. The photograph at the right was taken from the Furka summit.

Below is a party automobiling on the famous Erucig route in Switzerland.



At the left is one of the spacious new Swiss post-automobiles traveling from Andermatt to Gletsch. This photograph shows the party stopping at the Rhone Glacier, of which they can obtain a wonderful view while sitting in their comfortable vehicle.

Above is a party automobiling along the lovely Lake of Brienz, Bernese oberland, Switzerland.

let down the irksome barriers of former years. Today, the land of the Alps, from the valleys up to some of the most celebrated high Alpine resorts, beckons as the most enjoyable holiday country for autoists in the Old World.

A tour of all Switzerland by automobile! Who could resist the temptation! Starting at Basle, the famous gateway of the Helvetic Republic, we are glad to be able to listen to the call of that noble dean of Europe's rivers, the Rhine, whose cradle stands in the lofty mountains of the Canton of the Grisons. For almost the entire distance between Schaffhausen and Basle this much-sung stream forms a most interesting natural frontier between Switzerland and Germany. A carefully maintained road follows its zigzagging course and many an ancient little town holds out a friendly welcome en route.

A Progressive Spa

Rheinfelden, once an outpost of the Holy Roman Empire, now a progressive spa, whose brine baths stand comparison with the best of this variety in Europe; Säckingen, delightfully quaint and full of reminiscences of Scheffel, the poet; Neuhausen, where the Rhine, 125 yards broad, throws itself in three gigantic leaps over a romantically framed rocky ledge, these forming the most imposing cataract to be found on the continent; Schaffhausen, priding itself with many features of the early Middle Ages, and possessor of that venerable old bell the inscription on which, "*Vivos voco, mortuos plango, fulgura frango*," inspired Schiller to write his immortal poem "The Song of the Bell."

Along the Rhine and the Lake of Constance we may proceed to Ragaz, another delightful watering place with thermal springs and at present yet—until the Canton of the Grisons has opened its gates entirely (a start has already been made with the Maloja Pass between Chiavenna, Italy, and St. Moritz, Upper Engadine)—the turning point in a motoring tour through Switzerland.

Skirting the magnificently framed Walen See, we decide on an expedition into the Canton of Glarus, reserving the delights of a drive around the nearby Lake of Zürich for a later date. The Glarnerland, as this picturesque part of the country is called, provides a continuous feast for the eyes of lovers of Alpine scenery. Its valleys, its lakes, its mountains, all possess a beauty and charm which both enthrall and appeal, and now that the Klausen Road, leading from Linthal over to Altdorf, on the Gothard Line, is also open to automobilists, this miniature Garden of Eden will undoubtedly become better known.

Birthplace of Tell

Of all Swiss Alpine roads, the Klausen, constructed from 1893 to 1899 at a cost of Frs. 4,140,000, is undoubtedly one of the finest. Passing Bürglen, Tell's birthplace, and skirting the boisterous Schächen, in the depths of which this beloved Swiss hero finally found his death when saving a drowning child, this highway possesses added interest for those acquainted with native folklore and history.

And now we reach the classic region of the Lake of Lucerne, where headquarters can be established for an almost unlimited choice of side trips, all with excellent roads. The Axenstrasse, a marvel of engineering skill for scenic effects; the Gothard Road leading to Italian Switzerland; the neighboring cantons of Schwyz, Zug, Zürich, Argovie and Unterwalden, all abound with scenic and historic attractions and the local Inquiry Office at Lucerne is ever ready to assist motorists with helpful suggestions.

The usual and most attractive way to travel from Lucerne to Interlaken, center of the Bernese Oberland region, is over the Brünig and along the Lake of Brienz, also known as the seat of the wood-carving industry. From Meiringen the Grimsel Pass leads up to the Rhone Glacier and the Furka Pass, which in its turn connects with the Gothard route in a northeasterly and with the Simplon route in a southwesterly direction. Both Grimsel and Furka are among the important high Alpine roads which have but lately been thrown open to motor traffic.

Interlaken, so enchantingly situated in full view of the famous Jungfrau, can, like Lucerne, serve as headquarters for a variety of excursions in this part of Switzerland. There are the valleys of Lauterbrunnen and Grindelwald, from either of which points a mountain railway will take us to Little Scheidegg, a beauteous realm of pastures, from which the Jungfrau railway winds its way effortless through the body of the huge mountain giants, the Eiger and Mönch, to Jungfraujoch, where snowsports of every variety, including rides on sleighs drawn by polar dogs, are daily features in July and August.

A Quaint Old Capital

Berne, which may be described as the quaintest and most delightful of Old World capitals, serves as another convenient stopping place for the exploration of Western Switzerland, with ancient Soleure and its romantic Hermitage; Bienne, with its ever attractive Gorges du Taubenloch; Neuchâtel, with its magnificent old Château, and Morat, with its historic stronghold. Autoists in quest of some typical old-time inns, where the most appetizing

repasts—with the delectable Swiss river trout never missing—can be had at shortest notice and for very little money, generally manage to reserve a special day for that pioneer of Swiss farming valleys, the Emmental, where every village prides itself with at least one hostelry of this pleasing type.

Via historic Fribourg and the idyllic pastoral country of the Gruyères, far famed for its cheese products and much sought by admirers of quaint architecture, an easily graded highway leads down to the borders of Lake Geneva, with its wonder cities of Montreux, Vevey, Lausanne and Geneva, dotted like precious jewels on the northern shore. After an unforgettable tour around this beautiful expanse of water in whose transparent depths every mood of the surrounding mountain heights seems to be faithfully mirrored, the motorist of leisure will now proceed towards the Rhone Valley in order to become acquainted with the many enchanting spots in that district which have but lately been opened to automobiles.

Champéry, lovely Alpine village in the interesting Val d'Illeiez, where the women are wont to perform such arduous tasks that they wear masculine garb; the great St. Bernard Pass leading to the widely known Hospice with its devoted inmates, the monks and the St. Bernard dogs; the picturesque road from Sion to the Mayens de Sion and the road from Sion to Evolène and Haudères in the glorious Val d'Hérens; the Baths of Leuk, that flourishing little spa above Leuk, where the ancient and modern form altogether delightful contrasts. Here and there, all along the course of the river Rhone, beckon these interesting side trips, each affording an insight into some individual little world, and fortunate indeed is he who can explore these wonder paths off the beaten track.

The Alpine Highways

At Brig the motorist has the choice of two of the country's foremost Alpine highways, the before-mentioned Furka, leading up to the Rhone Glacier and further on to the St. Gothard region, and the Simplon Road crossing over to Iselle and Domodossola, and connecting with the much-sung Italian lake district, where the head of Lake Maggiore with Locarno and the best portion of the Lake of Lugano are on Swiss territory.

From Locarno, with its imposing pilgrimage church, the Madonna del Sasso, the main road leads eastward to ancient Bellinzona, on the Gothard route, and from here the approach to Lugano, that radiant Swiss Italian city, with its southern flora and vege-

(Continued on page 40)

WITH THE ORGANIZED MOTORISTS

Legal Department of Automobile Club Enlarged

The Legal Department of the California State Automobile Association was organized two years ago for the purpose of advising members of the Association, through its attorneys, as to the law pertaining to the operation and ownership of automobiles.

At the time, Director Percy E. Towne was appointed General Counsel and George E. Sandford was appointed General Attorney for the Association and assumed the burden of advising members as above stated, and participating in flagrant cases of traffic violations. Since then, C. J. Creegan was appointed by Sandford as an Associate Attorney to assist along the lines just mentioned.

Starting June 1, attorneys were appointed to represent the Legal Department of the Association in the larger district offices, as follows:

A. T. Shine at Oakland, George A. Nicholson at San Jose, Johnson & Lemmon at Sacramento, Stanley M. Arndt at Stockton, Thomas C. Boone at Modesto, and Lindsay & Conley at Fresno.

These appointments will suffice for the time being in taking care of members seeking legal aid and advice, and in the near future additional attorneys will be appointed to represent the district offices at Redding, Chico, Vallejo and Salinas.

The Legal Department, through its attorneys, has been active in observing traffic conditions in and out of San Francisco, and in many cases actually participating in prosecuting or defending flagrant instances of traffic violations. Members are very often represented in the Police Court and their cases are satisfactorily disposed of, without their appearance being required, in all instances where a plea of guilty is entered.

The Legal Department also takes care of all accidents and collisions of members who are not insured, up to the point of trial. In these cases the member makes a report of his collision and the case is thoroughly investigated by the department attorneys and a decision as to liability is rendered. Should the facts show that the member is guilty of negligence, proximately and solely causing the collision, he is so advised. If, on the other hand, it appears that the other party concerned should be held liable, the member's case is presented and every attempt is made to arrive at an amicable settlement. If the case is one in which litigation is unavoidable the department attorneys so advise, and the member must then retain his own attorney for the purpose of taking his case to court. Advice is also given as to any interpretation of the Motor Vehicle Act or any other law of this state or of any municipality which has to do with the operation of automobiles.

The attorneys are constantly attempting to point out the unreasonableness of any law that might now exist and drafting new ones in lieu thereof that will better remedy the dangers that accompany the operation of vehicles upon the highway. For this purpose the Association is represented, through its attorneys, at each session of the Legislature and every interest of the motorist is kept in mind in attempting to assist in the framing of the laws affecting them.

Uniform Tow Service Charge Assured Club Members

Uniform and moderate tow service charges throughout Northern California are assured the thirty thousand members of the California State Automobile Association during the 1922 touring season, according to an announcement by President George S. Forderer. The official garages of the California State Automobile Association at a meeting held

in San Francisco unanimously agreed to immediately inaugurate the following schedule of rates:

1. Charge for tow car and equipment, including driver, per hour..... \$4.00
2. From 6:00 p. m. to 8:00 a. m. and Sundays and Holidays, per hour..... \$5.00
3. Minimum charge for tow car and driver..... \$2.00
4. Minimum charge from 6:00 p. m. to 8:00 a. m. and Sundays and Holidays..... \$2.50
5. Additional men on any job to be charged for at regular shop time.

In addition to agreeing to the schedule of rates the California State Automobile Association official garages, which represent the best available garage and repair facilities in the towns and cities in which they are located, will install and maintain sanitary rest room facilities.

Besides perfecting arrangements whereby its members will benefit by a uniform and moderate tow charge the Association is maintaining free tow service for not only its own members but those of the Automobile Club of Southern California, over the Chowchilla Mountain on the Wawona Road and the Big Oak Flat grade. This tow service has also been extended to the general public under certain conditions. The official California State Automobile Association tow car is now operating on the Chowchilla Mountain. A second tow car will soon be placed in operation on the Big Oak Flat road.

Under the arrangements perfected, members of the Association may be assured of a uniform and moderate rate at official garages as well as free tow service into Yosemite Valley.

Campaign Opened On Automobile Bandits

Aroused by the brutal murder of Mrs. Annie Wilkens in an automobile holdup in San Francisco, the California State Automobile Association opened a campaign for a \$5,000 reward to be offered for information leading to the arrest and conviction of the automobile bandits responsible.

With the co-operation of the San Francisco Motor Car Dealers Association, and city and county officials, the sum was speedily secured.

In speaking of the plans of the Association to stamp out crimes similar to the Wilkens murder and in announcing a campaign for a standing reward, President George S. Forderer of the Association said:

"The State Automobile Association is determined to stamp out the activities of automobile bandits not only in San Francisco but throughout Northern California. The Association will bend every effort to protect not only its thirty thousand members but the motoring public in general.

"It is the intention of the Board of Directors to raise by subscription a permanent fund of several thousands of dollars to be used solely as rewards for information leading to the arrest and conviction of criminals preying upon the motoring public. This fund will be controlled by the board and offered in such cases as warrant this action.

"Since this brutal crime Cas J. Wood, who donated \$100 to the reward, and other members have protested to the Association against the activities of automobile bandits and pledged themselves to assist in bringing them to justice. With a substantial standing reward offered for the arrest and conviction of such thugs, the Association feels a forward step will have been taken in stamping out such crimes.

"The murder of Mrs. Wilkens by automobile bandits is the last straw in a series of holdups throughout Northern California and it is our intention to not only be of material assistance in capturing these thugs but in seeing to it through our Legal Department that such men are dealt with to the fullest extent of the law."

New Federal-Aid Appropriation Passes

Within the last month Congress passed a new Federal-aid appropriation measure to assist the various States in constructing highways. The bill carries a total appropriation for Federal-aid roads of \$190,000,000 and an additional \$13,000,000 for forest roads and trails.

The Good Roads Bureau of the California State Automobile Association has been active in supporting this measure and urging its passage. Because of some very objectionable features that were proposed, nullifying in some degree the good effects of the so-called Graduated Scale in the Western States, the California State Automobile Association through its Good Roads Bureau, in common with many other Western organizations, has been urging upon Congress and the various committees the necessity of retaining the old law intact.

The appropriation as finally agreed upon means an additional \$6,023,000 for California Federal-aid highways and \$1,858,000 for forest roads. The first is to be apportioned through a three-year period ending with the fiscal year 1925 and the latter divided equally between the fiscal years 1924 and 1925.

The graduated-scale provision as passed on November 9th last, which has been particularly beneficial to the Western States, was retained.

Federal participation per mile of road is reduced from \$20,000 to \$16,250 for the fiscal year 1923 and to \$15,000 thereafter. The bill as it passed the House sought to make \$10,000 per mile the limit, and it was upon that feature that particular attention was given to the measures by the Western organizations.

The Western States should feel jubilant over the new act, for they have received everything they asked except the maintaining of the Federal participation at \$20,000 per mile. The reduction to \$15,000 per mile will not be a detriment to States like Oregon, Washington and California, and in others of the Western States its effect will hardly be felt. It merely means that States like Nevada wishing to build an expensive type of roadway will not be able to get as much Federal aid as they would under the old law. Practically all of the types of construction contemplated there and elsewhere in the West are those well within the limit of \$15,000 per mile of government co-operation.

The Second Highway Down the Peninsula

While as great a headway has not been made to build an additional highway down the San Francisco peninsula as the necessity demands, still some progress has been made.

The temporary organization of the Joint Highway Districts of San Francisco and San Mateo counties was completed within the last few days by the appointment of John MacBain, Supervisor of San Mateo County, and Supervisors Richard Welch and J. Emmet Hayden of San Francisco as

the board of directors. MacBain was chosen chairman and Welch secretary.

The State Highway Commission is about to make the survey and necessary engineering reports upon which this temporary organization can report back to the two boards of supervisors.

Coincident with the doing of the engineering work there is much that the directors can do in the way of formulating policies and methods of financing the work.

The Good Roads Bureau of the Association is co-operating in every possible way with those agencies fostering the second highway.

It is important that considerable attention be given to this matter of an additional highway and bridge across the lower bay in the next few weeks, otherwise the time will have passed for considering the levy of a tax this year. Unless that tax is levied the construction work will be delayed for a long time, and unnecessarily too, for it is not impossible to do these things within the time that is available.

Touring Bureau Opened for Shriners

The direction of the visiting Nobles of the Shrine in their national convention in San Francisco was one of the tasks which devolved on the California State Automobile Association last month. A twenty-five-mile drive through the beauty spots of San Francisco was outlined and co-operation of all motorists of the bay cities was enlisted toward the minimizing of accidents during the period of congested traffic.

Hundreds of signs directing the Shrine delegates to their headquarters were erected, together with signs of welcome and signs directing tourists about the scenic spots of the city. In addition to this the Association maintained a touring bureau which furnished the Shriners with strip maps and touring information.

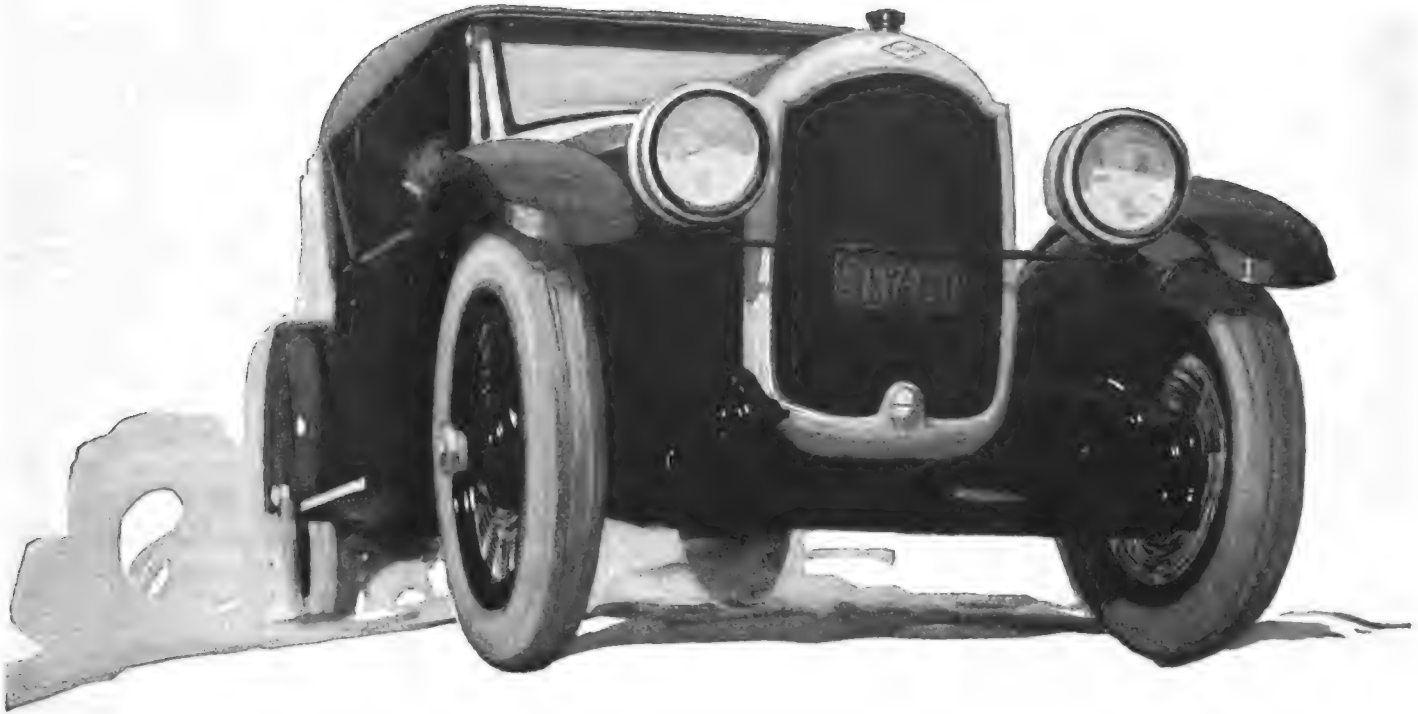
Road Signs Erected in Mountain Counties

The Engineering Department of the California State Automobile Association is now engaged in erecting hundreds of additional yellow and blue road markers in the mountain counties. Since trucks could be driven into the high Sierras the Association began the erection of 900 signs in Plumas, Tuolumne, Sierra and Mariposa counties. Notes have been taken for the erection of several hundred signs in El Dorado County and the work of erecting 260 signs in Sutter County has been completed.



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Take this ride today. Get out in the open where you can experience the joy of truly responsive power, perfect spring suspension, and steady restful riding qualities. Then, remind yourself that this is the car—the champion of them all—that you can now buy for \$2195.

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MOTOR GOSSIP OF THE MONTH

By THE OBSERVER

Oil-Cooled Engines

The oil cooled engine is coming in for a great deal of attention in England and France. It is hailed as having the simplicity of the air-cooled engine with the cooling efficiency of the water-cooled engine. In appearance it looks little different from the usual air-cooled design except that the crankcase may be larger, and it may be considered as an accidental development of the air-cooled engine. During the war a British engineer, Granville M. Bradshaw, noticed that a certain air-cooled stationary engine was perfectly cooled when a fan placed some feet away blew a broad stream of air over the engine, but that the same engine overheated badly when air was directed through the ducts surrounding its cylinders. The only possible conclusion was that in the first case the crankcase dissipated the heat to the air flowing over it, and that the heat was carried to the crankcase from the pistons and cylinder walls by the circulation of oil vapor within the engine. Subsequent tests proved that this conclusion was correct and from it the oil-cooled engine developed. These new engines are distinguished by large crankcases from which only the air-cooled heads of the cylinders project. The body of the cylinders, and the pistons are not air cooled but oil cooled, by direct contact of oil vapor with their surfaces. The cylinder heads and valve pockets are finned so that it may be said that these parts alone are air cooled. Among the advantages claimed for oil cooling may be mentioned: more uniform cooling; less leakage past pistons because of reduced distortion due to better cooling; more direct cooling of valve seats; lower temperature of lubricating oil and longer retention of its lubricating qualities.

New Temperature Indicator

An entirely new motor temperature indicator has been brought out by a prominent manufacturer of clutches for motor cars. It takes its place on the instrument board alongside the speedometer, ammeter, oil gauge and other instruments and resembles a gauge in appearance, and in fact it is a heat gauge. Its dial is divided into four sections marked cold, cool, efficient and hot; the latter section is in red. The gauge hand is actuated by a flexible shaft which runs to a thermostat which is clamped to the cylinder block. The thermostat expands and contracts according to the temperature and its motion is multiplied by a gear and segment. The advantages of the new in-

strument include the fact that the one model will serve all makes and that it gives its indication at the instrument board, where it can be seen more readily at night. It is no more readily stolen than any other integral part of the car.

Use of Raw Materials

The raw materials used by the automobile industry would be sufficient for all the needs of a small European state. In the production of 1,667,550 passenger cars and trucks during 1921, 1,500,000 tons of iron or steel were consumed, or nearly a ton per car. Counting wastage these figures are in remarkable accord.

The facts are obtained from the National Automobile Chamber of Commerce. The next largest item is lumber, the consumption being 313,800,000 board feet. The automobile industry uses 16,500,000 square feet of plate glass or 30 per cent of the total production. Twenty-two per cent of aluminum produced goes into automobiles, 43,000,000 pounds out of 198,000,000. Sixteen per cent of the copper production, or 83,425,000, was used up in the automobile and motor truck factories.

Thirty-seven million one hundred and sixty-five thousand square feet of real leather was used in upholstering while 88,400,000 square feet of imitation leather were used. Among other materials consumed during the year 1921 there were 12,510 tons of tin, 3,400,000 pounds of nickel, 5,357,000 yards of upholstery cloth, 15,330,000 yards of side curtain material, 16,000,000 yards of hair and padding, and 5,000,000 gallons of paint and varnish.

A French Economy Record

Those interested in gasoline economy will applaud generously the news that a small four-passenger French car recently ran 100.5 miles at the rate of 25 miles per hour on a gallon and a half of gasoline. This is 66 miles on a gallon, which is wonderful, especially considering that the average speed was 25 miles per hour. The car was a Citroen equipped with a four-cylinder overhead valve engine. Its power is not stated but previous Citroen models developed five and ten horsepower respectively. André Citroen is in a fair way to become the Henry Ford of France. He possesses perhaps the largest manufacturing plant in the country, making guns, automobiles and many other things. After the war he became interested in the small car problem and now is probably turning out more cars than any other manufacturer in Europe.

A New Six-Cylinder Knight

A new six-cylinder Sterling Knight is to be manufactured for those who wish a sleeve valve car of the highest quality. It is believed that there is a sufficiently wide market in the United States to assure the success of such a car, and it is pointed out, in confirmation of this contention, that there are four European countries building Knight motored cars in the luxury class. There is the Daimler in England, Panhard in France, Minerva in Belgium, and Mercedes in Germany. All the models built by the first three have Knight motors while some of the Mercedes models have them. The Sterling Knight will have an engine with a 3¾-inch bore and 5¼-inch stroke, developing more than 75 brake horsepower at 2,200 revolutions per minute.

An Eight-Wheeled Motor Bus

An eight - wheeled pneumatically tired motor bus is being built by the Goodyear Tire & Rubber Co. All four front wheels are used in steering. It is believed that motor vehicles, like freight cars, will eventually have more than four wheels and successful experiments with a six-wheeler convinced the Goodyear company that there was also much to recommend an eight-wheeled bus. The machine will have a wheelbase of 180 inches, the distance being measured from a point halfway between the front wheels to a point halfway between the rear wheels. The body will be a pay-as-you-enter type and will accommodate 55 passengers.

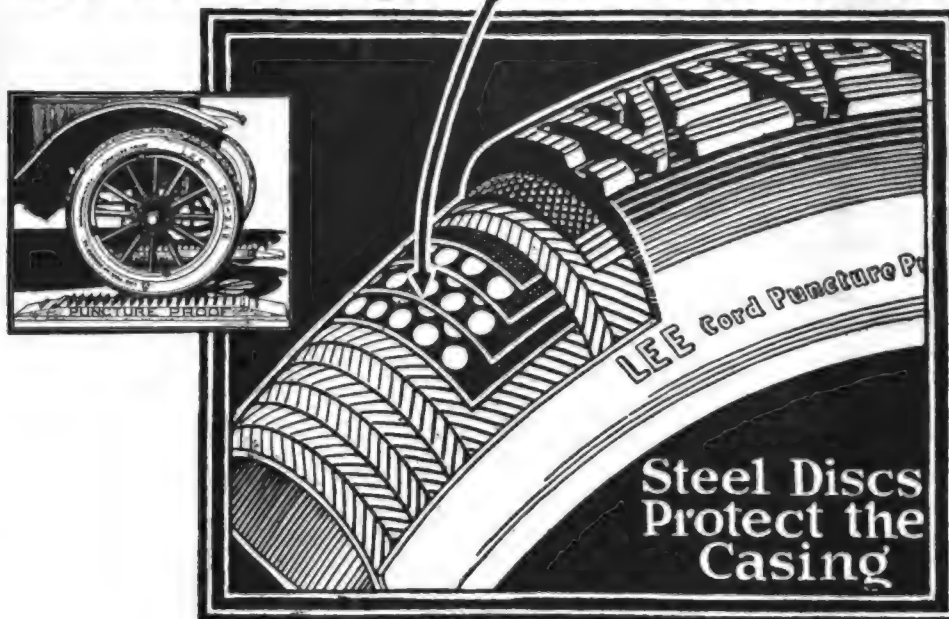
A Gasoelectric Line

Two Minneapolis automobile dealers, Harry E. Pence and W. R. Stephens of the Pence Automobile Co., have taken charge of the Dan Patch gasoelectric line and have put it on a profitable basis. Its passenger business has been doubled and its freight business increased to 2,000,000 tons a month. The road was bought for \$200,000 at a receiver's sale in 1918, and \$400,000 has been spent on its rehabilitation. It is now discovered that the road is valued at \$4,000,000 according to a government report. The Pence company is Buick distributor for the Northwest.

A New De Luxe Lincoln

A new de luxe touring car is announced by the Lincoln Motor Co. The new model is a companion to the de luxe phaeton and roadster models. All these models list at \$3,800. These models are in addition to the regular line which lists at \$3,300.

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PITTSBURG HIGHWAY TESTS

Track Repaired and Traffic Resumed Under Auspices of U. S. Bureau of Roads

WHEN the traffic was stopped on the Test Highway at Pittsburg last January 3,668,100 tons had passed over the thirteen different sections of highway, causing so much disintegration in some of them that the maintenance became such a serious factor as to hinder the operation of trucks. At that time officials of the California State Automobile Association pointed out that the tests had shown more forcibly than ever the need of more thorough investigations of this nature.

The work up to the time of the stoppage of operations last January was carried on by private organizations in which the State and Federal authorities co-operated. Chief among these was the Columbia Steel Company, which not only inaugurated the tests but bore the bulk of the financial burden.

Shortly after the work was discontinued the California Highway Commission and the U. S. Bureau of Public Roads decided to take over the Test Highway and continue making these all-important investigations. The track was repaired by replacing all of the worn-out spots with concrete patches six inches in thickness. Two new slabs

were placed in order that observations of impact might be made in two of the tunnels. One of these new sections is identical in cross section with the so-called Arizona type which stood up so remarkably well in the last tests, but differs from it in having the equivalent of 47 tons of reinforcing steel per mile. It will be remembered that the so-called Arizona type had no reinforcement. Except for these two sections of new slabs the Test Highway has the same identities that it had in the previous tests.

Corners of Slabs Strengthened

In connection with these two new sections there were placed eight different types of expansion joints, two of which are really methods of strengthening the corners of slabs. Special observations will be made of these joints in order to determine if possible a remedy for the so-called "crow foot" cracking so commonly seen on our highways.

Traffic was resumed on June 1st and has been carried on continuously ever since. There is employed an average of about 32 army trucks with pig iron which gives a gross load of 23,800 lbs. each, it being distributed so as to have

7000 lbs. on the front wheels and 16,800 lbs. on the rear. This load with the size of tires on the trucks gives exactly a load of 700 lbs. per inch width of tire. The trucks are run both ways on the track and at a speed of from 12 to 14 miles per hour. Up to the night of June 17, 1,746,600 tons of traffic had been employed in an endeavor to destroy the highway as it had been repaired. This makes a gross total load of 5,414,700 tons since the tests were first commenced.

Provision has been made to keep the areas which disintegrate first repaired with a mixture of asphalt and crushed rock so that the difficulty with maintenance which was experienced before will be considerably reduced.

It is too early now to draw any conclusions as to the results of the tests since they have been resumed, for no section has yet failed to the extent that it can be called a complete failure.

Arizona Type Stands Up

Section J, which is the so-called Arizona type of pavement and most nearly corresponds to the recommendations made by the engineers of the two Automobile Clubs, as being the

C A D I L L A C



Its Dependability Proves Type 61 the Greatest Cadillac

With more than 15,000 of the Type 61 already in use, owners of the car are unanimous in acclaiming it the greatest Cadillac ever produced.

Factory Service on the Type 61 for the first nine months has been less than one-third of that required by any previous new Cadillac in a like period.

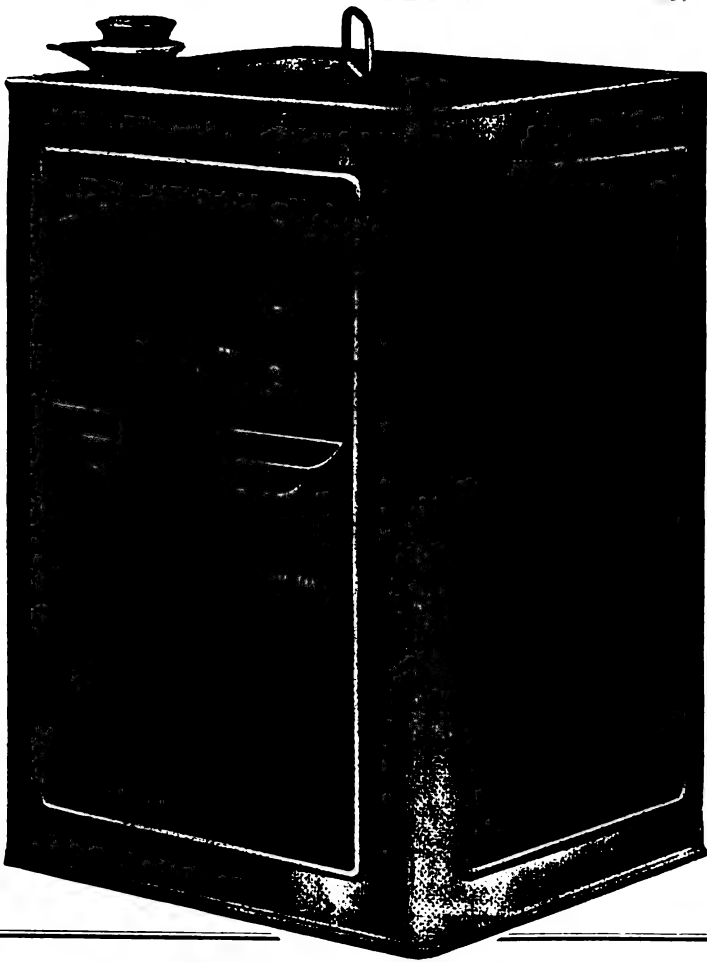
The one fact upon which owners seize, and ardently emphasize, and recur to again and again,

is the new Cadillac's amazing dependability, which they insist has never been equalled or approached before, even by the fine Cadillac forerunners.

What bears them out in this verdict, and establishes completely Type 61 preeminence, is the fact that all former production schedules have been exceeded and that numerous cities report the largest Cadillac sales in their history.

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It has been said that advertising is "The Great Master Salesman," also that satisfied customers are the "best form of advertising." DOMINION Oils have been satisfying the most critical and discriminating trade for the past eight years and have won the confidence of the public through the unvarying high quality of the oil. **Send for our pamphlet which contains information about oils that every user and dealer should know. DOMINION Oils are refined from 100 Per Cent Premium Grade Pennsylvania Paraffine Base Crudes.**

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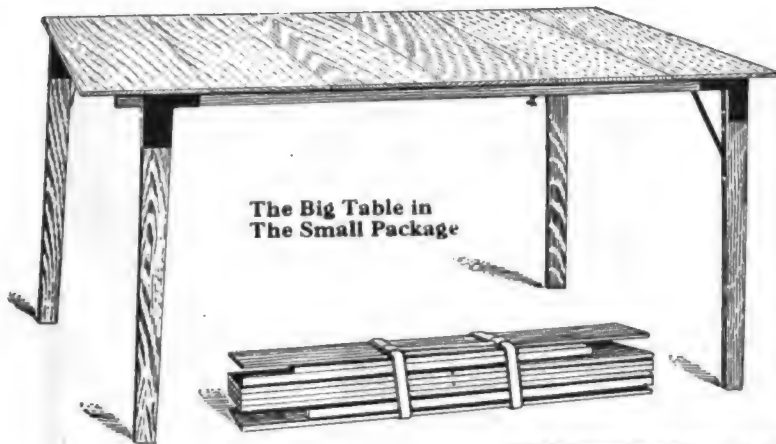
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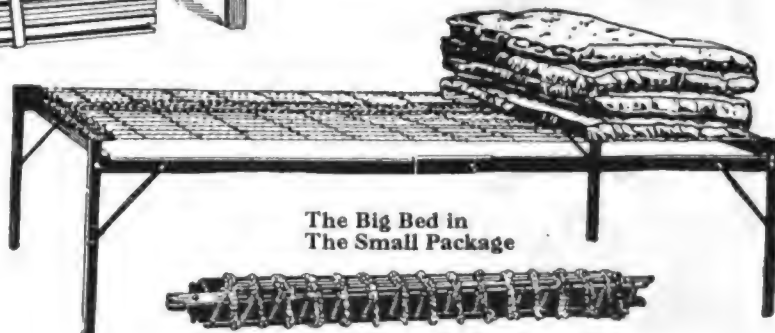


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Order from your dealers. If they can't supply, order direct.

Bed The 1922 model is distinguished by the combined chain and link fabric and the improved leg action, which locks leg in rigid position by simply unfolding it. Rolls up into a package only 5 inches in diameter by 4 feet 4 inches long. The most compact bed made, yet when mounted is a double bed 4 feet 2 inches wide, 6 feet 4 inches long, and stands 19 inches off the ground. A handy extra bed at home. Made of standard bed steel, strong and durable. Mattress folds, blankets placed on it, the bundle strapped together, placed on the seat and cushion taken out so that no car space is used.



Manufactured and Patented by **H. R. BASFORD COMPANY** Furniture Exchange Building
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type of pavement that should be laid by the State Highway Commission on the main trunk lines, is still standing up in spite of the terrific traffic that it has been forced to carry. This section required practically no repair work at the time of the shutdown and from appearances today is in as good if not better condition than practically all of the other sections in the test.

On the other hand practically all of the failures that have occurred on the original construction have been on sections B and L. No disintegrated areas are to be found on Section J. Section B, it will be remembered, is a five-inch reinforced concrete type of pave-

ment extensively laid in the State Highway System of California. Section L is another five-inch reinforced section.

The Good Roads Bureau of the California State Automobile Association has employed an engineer who is constantly at the site of the work making observations in order that it might make independent deductions from these investigations.

The State Highway Commission and the U. S. Bureau of Public Roads are to be commended for their activities in the resumption of these tests, particularly in view of the fact that some of the things that are being brought

out there are surprising to the designing road builder, and contrary to all expectations.

There is a rumor that these tests will be continued even after the present track is destroyed. Every one who is familiar with the lack of knowledge of highway construction not only in this state but elsewhere believes that there can never be too much research work along the lines of the Test Highway at Pittsburg, and it is to be hoped that immediately this highway is brought to a state of destruction another will be made available for the same sort of study.

"FLIVVER-BOOB" IS JAY-WALKER ON WHEELS

RECKLESS and careless drivers of automobiles are to be known as "flivverboobs," according to the decision reached by the judges deciding the American Automobile Association's contest to pick a name describing the reckless driver in the same manner that "jay-walker" describes the careless pedestrian. The name was suggested by F. B. Simpson, of Cedar Rapids, Ia., who will receive

the \$25 in gold offered as a prize by the A. A. A.

More than 10,000 names were submitted in this contest and the suggestions came from all parts of the United States. The committee selected to pass on the suggestions consisted of Col. C. O. Sherrill, head of Public Buildings and Grounds, Washington; Dr. Frank W. Ballou, superintendent of Public Schools, Washington; Inspector Albert

J. Headley, head of the District of Columbia Traffic Department; Charles W. Semmes, president of the Semmes Motor Co., and Isaac Gans, prominent Washington business man.

The contest attracted nation-wide attention and the answers were of many varieties, including some which declared that it would be impossible to describe a reckless and careless driver in language that would go through the mails.

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THE HIGHWAY OF THE PACIFIC SHORE

(Continued from page 19)

close together and is greatly influencing the progress of commerce and lessening the cost of marketing the products of the farm and of our industries.

But it is not as a commercial road that it is going to become famous. The wonderful and varied scenery, lying on both sides of the 1650 miles, incomparable either in this land or any other, begins in California, with the orange groves, vineyards, palms, and all the charm of a semi-tropical country; then proceeds through mountain passes, paved like a city street, skirting beautiful Mount Shasta, with its crown of eternal snow, as it enters Oregon.

There is nothing more charming in America than the undulating picturesque southern Oregon country, with its pastoral scenes, winding rivers and park-like meadows, orchards of apples and peaches, and its clean, attractive, growing cities such as Portland, the Rose City.

From Portland the highway proceeds through the State of Washington, the country being of the same character as southern Oregon, with vistas of sea and mountains, and passes through interesting cities and prosperous country towns, each having a particular charm of its own, until it reaches Tacoma, the

gateway to Rainier National Park, with its glacial peak rising 14,400 feet above sea level, the premier playground of America.

Branches from Tacoma

From Tacoma there are two branches of the Pacific Highway, one through the valley and one on the hill, to Seattle, and along both of these routes there are dairy lands, fruit lands and the most extensive small-fruit orchards in North America.

From Seattle to Vancouver is a panorama of nature never to be forgotten, winding along the shores of Puget Sound, through Everett, Bellingham, Mount Vernon and other picturesque towns, with the wonderful snow-crowned Mount Baker on the right and the magnificent Olympic Range on the left.

The Pacific Highway also reaches the capital city of the Province of British Columbia, Victoria, by steamer, either by way of Seattle or along the Olympic peninsula to Port Angeles and then to Victoria, or by way of Anacortes and a ferry to Sydney, and thence to Victoria.

This trip through the San Juan Islands is the most marvelous inland sea

trip in the world, the steamer winding through passages between verdure-clad islands for three hours in a way that almost makes one marvel at the possibility of threading through them, in some places the passengers being able almost to touch them with their hands from each side of the steamer.

Road to Vancouver

By continuing the main highway to Vancouver through New Westminster and the lower Fraser Valley, the metropolis of British Columbia, Vancouver, is reached, a city of progress, of enterprise and with a remarkable setting.

It can readily be realized that such a highway is destined to be famous as the greatest recreation road of this continent.

California with its farms and orange groves at one end, British Columbia with its magnificent mountains, harbors, bays and inland seas at the other, with an ever changing panorama of scenic beauty in between, make this great white ribbon the delight of all motorists and the greatest sport for automobilists, affording them a perfect vacation, with their families, in a sane, healthful and invigorating outing on the shores of the great Pacific.

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A visit to San Francisco will be all the more pleasant if you stop at the Hotel St. Francis. For here sincere hospitality, flawless service, ideal location unite to make it "one of the world's great hotels."

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Approximately two of the ten million motorists in America will find it necessary to replace their batteries during 1922.

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Others will purchase Exide Batteries—a trifle higher perhaps in first cost, but the most economical in the end. For Exide Batteries are the long-lived batteries, not in a paper guarantee, but in actual service in your car.

Any Exide Service Station will gladly show you why.

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- 2 It is made by Bausch & Lomb Optical Co., for nearly seventy years the leading lens makers of America.
- 3 It is factory equipment for Cadillac cars, and for other cars of the highest grade.
- 4 It is a lens positively without glare, but gives a powerful light.
- 5 It directs the light where it ought to go, and directing light is an optical process.
- 6 It gives a solid band of light the full width of the road, without streaks or dark places.
- 7 Safety has become one of the most fundamental factors of automobile driving—safety for yourself and the man coming towards you.
- 8 The traffic laws are going to be enforced more rigidly and your lights and headlight lenses must hereafter bear close official inspection.
- 9 Therefore, you need the Bausch & Lomb automobile headlight lens.

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MANY ADVANCES IN AERONAUTICAL FIELD

Three Outstanding Events Marked on Aviation Calendar of 1921

IN AVIATION, the year 1921 is marked by three outstanding events, one of universal and epochal importance.

During June and July there were held, 100 miles off the Virginia Capes, a series of experiments in the course of which aircraft flown from land bases bombed and sank, one after the other, a submarine, destroyer, light cruiser and dreadnought, the most modern examples of warship construction.

In the fall the Conference on the Limitation of Armament was held in Washington, and it is asserted that the bombing tests cleared the way, more than any other single event, for a possible solution of the international competition in capital ship construction. For the 2,000-pound TNT bomb which crushed in the steel walls of the *Ostfriesland* was, as the Army chief

of ordnance remarked at the moment, "heard around the world."

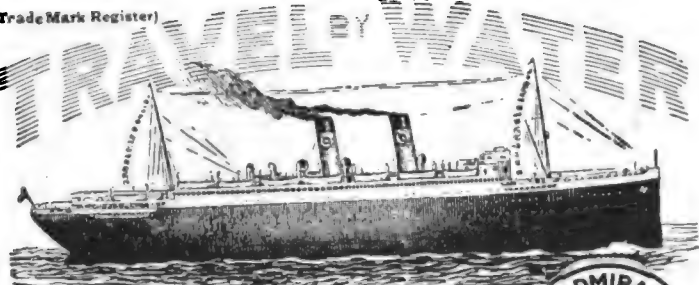
Commercial aviation, struggling for nearly three years without assistance of a national policy, found an intelligent and sympathetic friend in the Harding administration. The President in his inaugural address urged the early enactment of an aerial code and the consistent encouragement of civilian flying. In consequence there was drafted a bill regulating the operation of aircraft in interstate and foreign commerce, and establishing a Bureau of Civilian Aeronautics in the Department of Commerce.

Possibly the most definite proof of growth in interest in commercial aviation was the establishment, late in the year, of the Aeronautical Chamber of Commerce of America. The need for such an organization had long been felt. With definite assurance that an Aerial

Code would shortly be established, manufacturers of heavier and lighter-than-air craft, motors, parts, accessories, materials and supplies; dealers, distributors, operators and owners; associations, corporations, firms and individuals engaged in the commercial phases of the art, decided to equip themselves with a national organization of the type which had proved so useful in the development of other American industries.

The Aeronautical Chamber of Commerce was incorporated under the laws of the State of New York, "to foster, advance, promulgate and promote" aeronautics, and "generally, to do every act and thing which may be necessary and proper for the advancement" of American aviation. Formal organization was announced on December 31st, 1921, with a charter membership of 100.

Trade Mark Register)



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along**



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California and the Pacific Northwest are noted for the miles and miles of fine roads and for the many interesting objects and places. You'll have double the pleasure if you take your car along and now with this new Admiral Line feature there's no reason why you should not take it.

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Surely, this is proof of Kimkin ruggedness, strength and stability.

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Furthermore, by reason of their beauty and distinctiveness, their quick tire-change convenience and their easy riding qualities, Wire Wheels not only add greatly to the pleasure of motoring but they are a sound investment from the standpoint of ECONOMY.

Any of the branches or service stations listed below can supply Wire Wheels for any car. And—their service will be found to be prompt and efficient.

The illustration shows the B 6 Positive Locking Hub Cap type Wire Wheel—standard equipment on many of the highest priced cars.

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Seven Eleven Service Co., 1301 Broadway, Fresno	Wire Wheel Sales & Service Co., 1807—5th St., San Diego
Marshall Tire & Battery Service, 918 Ninth St., Modesto	The Fair-McQuoid Co., 399 South First St., San Jose
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SAN FRANCISCO, CALIF.

BRINGING A BALKY ENGINE TO LIFE

(Continued from page 20)

to the methods a detective would employ in running down a murderer. It would be more logical to examine the gasoline system step by step, and then go through the ignition system step by step, beginning with the battery and so on through to the spark plugs. But such a methodical procedure will not locate trouble as quickly.

In hurriedly examining the ignition system, if no apparent faults are discovered, it is advisable to determine once and for all whether the engine stoppage is caused by fuel system or ignition. Therefore, at this point, it is a good plan to prime the engine and see if any explosions are obtained. If they are obtained it is almost certain that the trouble is in the fuel system. On the other hand if no explosions are obtained it is likely that the ignition system is causing the difficulty. If the fuel system is to blame, it should be examined in the manner previously outlined. And if it is not, a further search must be made in the ignition system. As an additional check on the priming test, it is worth while to remove one of the spark plug wires or perhaps one of the spark plugs, and see if a spark is obtained while the engine is being cranked. If the plugs are badly

sooted, or moist with oil, it is possible that all of them need cleaning, although it is rather unlikely that all plugs will fail at the same time.

The next logical move is to see that the primary circuit of the ignition system is O. K. The first thing to do is to take a short piece of bent wire and after removing the distributor cap, short circuit the points on the breaker with the wire. If a spark is observed when the wire is pulled away from the points it is fairly good evidence that current is being supplied properly to the low tension circuit.

Battery Troubles

With most ignition systems the battery has to be in extremely bad condition to prevent the functioning of the engine. If the lights give anything more than a faint glow it is not likely that low battery is the cause of the difficulty although low battery in combination with some other defects might produce the trouble. For example, if the low tension wire running to the battery is badly corroded so that it makes a very poor contact, this fault in connection with a run down battery may cause stalling of the engine, although cases are very rare indeed where either

one of these troubles alone has produced this result.

If current is not flowing through the low tension circuit, a careful search should be made for a short circuit or a loose connection, or perhaps a broken wire. It is also necessary to take the switch apart and examine it as it may not be functioning. In most cases before going to this trouble it is advisable to use a small wire to bridge the terminals on the back of the switch. Sometimes these terminals may be reached from the under side of the instrument board, and then again it is necessary to loosen up the switch from the instrument board, and pull it out sufficiently so that these terminals may be reached. It is not necessary to take the switch apart unless this test shows that the fault is in the switch.

Next examine the breaker points and see that they are not only in good adjustment but that they are smooth. It may be necessary to remove the points and file them smooth if they are badly pitted. The points should be adjusted to give a gap of approximately one sixty-fourth of an inch, but this varies slightly with different ignition systems, and consequently it is a good plan to vary the adjustments one way

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The most beautiful spot on Lake Tahoe.

The country surrounding Tallac is a veritable paradise, gorgeous beyond words to describe. Go up now—the roads are fine.

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The mountain air is invigorating. Motor by Placerville Route. By rail—Southern Pacific by Truckee to Tahoe.

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or the other if there is any uncertainty as to the size that the gap should be. The gap of course should be measured when the breaker arm is at its highest point on the cam. If the car is on level ground the easiest way of bringing the cam to this point is to place the car in high gear and push it one way or the other a fraction of an inch at a time until the breaker points are maximum distance apart. In most cases this method will be found easier than rotating the engine by the use of the crank handle.

Erratic Engine Running

A stalled engine caused by breaker points which are out of adjustment or badly fitted is usually presaged by erratic engine running. For days previous to the time that the engine finally stalls it is logical to expect that some difficulty was experienced in starting the engine and it is likely also that when the throttle is closed the engine had a tendency to stop instead of idling regularly. When overhauling the breaker mechanism it is advisable to see that all wires are tight and that there are no loose strands causing short circuits.

The breaker mechanism of course should not be touched unless it is sufficiently out of adjustment or the points are sufficiently in need of smoothing to warrant the assumption that the fault lies here.

If the trouble does not seem to be in the breaker mechanism and if the rest of the low tension circuit seems O. K., the high tension circuit should come in for careful examination. Take a small piece of insulated wire and touch one end of it to the high tension terminal on the coil allowing the other end of the wire to stand about an eighth of an inch from metal parts of the car. If the engine is rotating under these circumstances a spark should jump from the end of the wire if the coil is in good condition and the low tension circuit is O. K. As described this test will require two men, but if only one man is available, the engine should be rotated until the breaker points are in contact. Then one hand may be used to snap the breaker points apart while the short piece of insulated wire is held against the high tension terminal on the coil.

The Distributor Brush

If the ignition system is O. K. up to this point the distributor brush should be carefully examined and it should be seen that it makes good contact. The whole interior of the distributor, too, should be clean and dry. If the engine still refuses to run, the chances are that the tests described have not been carefully made, although there are a few other possibilities to be mentioned. For example, if the car has been ex-

posed to a heavy rain storm it may be that the high tension wires have absorbed sufficient moisture so that the major portion of the high tension current leaks out through the insulation and not enough of it gets to the spark plugs to provide ignition. This trouble will not always make itself felt immediately after the storm. The engine may run all right and for the remainder of the day, and refuse to start next morning. It is also possible that the distributor cap has broken down electrically so that current leaks across it instead of travelling to the plugs. A defect of this sort in the distributor cap is almost certain to give warning by erratic engine running, for days previous. In some cases the cap fails only when the engine is extremely hot and as soon as it cools off the engine will run as well as ever for a time. The cap may have no apparent defects, and still cause the trouble described. If the cap is suspected, and the trouble does not seem to be elsewhere, it should be replaced, at least to determine whether the suspicion is correct.

Tight Connections

A gasoline connection will remain tight indefinitely if it is securely bound with ordinary friction or tire tape. The tape has a dual function. It locks the nut and if through any defect the

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KLEAN—KOOL—KOMFORTABLE—
SANITARY—ECONOMICAL—Protects
clothing from shoulder to shoe top. Fits any size Seat Cushion, in
any make or style of car.



The Wedford De Luxe Evr-Klean Seat Cover consists of three pieces of Imported Rice Straw Matting, flexible yet strong and durable.

The back is 19 inches high and 17 inches wide; the seat is 17 inches square and the flap is 7½ inches by 17 inches.

Each piece is faced with a 2½-inch strip of high-grade Khaki material, adding to the appearance and also to the durability.

The reverse sides are covered with a strong but neat

wear-resisting material. The edges are bound in such a manner as to make each piece practically indestructible. The three pieces are sewed together, forming a seat cover that can be used in any auto. Four tabs are sewed to each corner of reverse side, so if user desires, the cover may be quickly fastened to seat cushions.

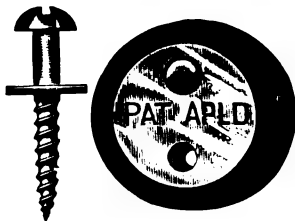
Ask your dealer to show you the STANDARD EVR-KLEAN SEAT COVER \$1.50 and JUNIOR EVR-KLEAN SEAT PAD \$1.00. All are the genuine—accept no imitations—our name is your protection.

WEDFORD Button Window Anti-Rattler

For closed body automobiles and house windows—a rubber button so made that when attached to frame it turns in and down with a wedge pressure holding glass tight. Does not project beyond frame to catch and tear clothing. Made of best materials and neat in appearance.

Retail each 15 cents.
Ask your dealer for them.

THE WEDLER-SHUFORD CO., St. Louis, Mo.
3540 OLIVE STREET

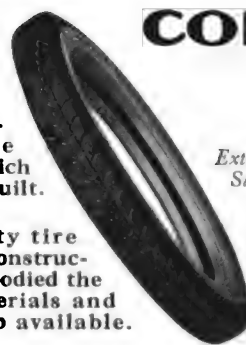


FEDERAL BLUE PENNANT CORD

Highest
Quality

Years of experience
in producing high-
quality tires is the
foundation upon which
this splendid tire is built.

Extra
Service



It is a full-quality tire
throughout; in the construc-
tion of which are embodied the
best methods, materials and
skilled workmanship available.

The full-traction tread enhances the attractive
appearance of the tire, and its thickness adds materi-
ally to the wear and service rendered.

Let a Federal Dealer supply your next tire.

The Federal Rubber Co.

500 Second Street

San Francisco

To The Lady With The White Gloves



Bowser Products

For Handling Gasoline
and Oils Wherever
Sold or Used

Filling Station Pumps
and Tanks for Gas-
oline.

Portable Tanks for Oil
and Gasoline.

Storage and Measuring
Outfits for Paint Oils,
Kerosene and Lubri-
cating Oils.

Carload Oil Storage
Tanks.

Power Pumps.

Dry Cleaners' Under-
ground NapthaClarify-
ing Systems.

Richardson-Phenix Oil
Circulating and Fil-
tering Systems and
Force Feed Lubri-
cators.

Write for Booklets

Because the operator can pump oil from the Bowser Lube-ster directly into your crank case without using tin can, funnel or measure, his hands are kept clean and the change he gives you will not soil your hands or gloves, nor spot up the fenders of your car.

Go to the filling station that has a Lube-ster on the curb—the dark green pump illustrated in this advertisement, when you need oil.

Bowser gasoline and oil equipment is always reliable—you get full measure and full satisfaction. Look for Bowser-equipped filling stations and garages and be sure of getting most mileage for your money.

Garages equipped with a Bowser Lube-ster sell more oil and give better service. Write for booklet A-15.

S. F. BOWSER & CO., Inc.

*Pioneer Manufacturers of
Self-Measuring Pumps*

San Francisco, 612 Howard Street

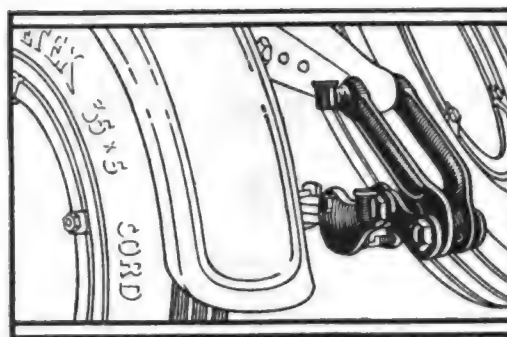
Los Angeles, 1225 S. Howard Street

*Branch Offices with Service
Departments in Principal
Cities in this country and
abroad. Representatives
everywhere.*

BOWSER

ESTABLISHED 1885

ACCURATE MEASURING PUMPS



No Springs to Break No Parts to Rattle

HERE is the *springless shock absorber* (no springs to get weak; no light parts to break; nothing to need replacing, wear or rattle)—the one owners never take off until they trade in their cars—that gives delightful riding and comfort with economical upkeep.

10 Days Free S & S Trial

Dealers sell S & S on 10 days free trial. This actual experience makes owners realize the "floating-on-air" sensation of riding on the S & S; know the added security to passengers; safety to springs; lowered tire expense; reduced gas consumption and elimination of high upkeep—savings that go hand-in-hand with the S & S.

TO CARS OWNERS—Ask your dealer or garage for 10 Days Free Trial. If he does not have the right size write to factory or nearest distributor.

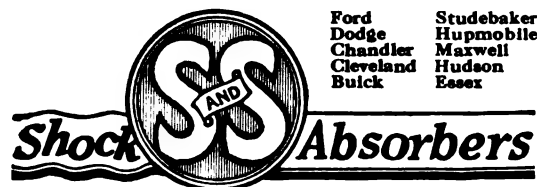
TO DEALERS, GARAGES—We protect you on our 10 Days Free Trial. Write to nearest distributor for all facts. The S & S "brings happy smiles on roughest miles" and knows no dissatisfied owners.

Western Distributor

Western S & S Shock Absorber Company
1322 South Grand Ave., Los Angeles, Cal.

Manufactured by

STARKWEATHER-SNOOK CORPORATION
MOLINE, ILLINOIS



Ford	Studebaker
Dodge	Hupmobile
Chandler	Maxwell
Cleveland	Hudson
Buick	Essex

joint ever springs a leak the tape prevents the gasoline from flowing out. The tape is wound tightly around the pipe adjacent to the connection and

also around the nut forming the connection. When this is done the nut is held securely. There is never any danger of vibration shaking the nut

loose and thus causing a leak. The practice of taping gasoline joints is recommended by one of the best engineers in the country.

SWITZERLAND, THE MOTORIST'S PARADISE

(Continued from page 22)

tation and its numerous masterpieces of old art, forms an all too brief series of scenic delights.

Another innovation was introduced during the summer of 1921 on many of the Swiss Alpine post roads. The time-honored horse-drawn diligence has been replaced by most comfortable modern autobusses, seating 16 persons, and this new mode of travel over the passes, which requires but half of the time formerly needed for a trip, has found such undivided favor that official comparative statistics show, for instance, that whereas 1801 tourists traveled over the Grimsel in July, 1913, 2719 travelers passed over that route in 1921. The number of tourists who traveled over the Furka in July, 1913, was 1125, but 3154 persons pat-

ronized this road during the same month in 1921.

Automobiling has therefore a great future in the land of the Alps and motorists will be relieved to know that well-equipped repair shops are now to be found throughout the country. Cars of various makes can also be hired from any of the leading garages in the country.

Of course, Switzerland does not allow "speeding." The law provides for 18 kilometers in towns and 40 kilometers in the open country, with special limitations for the high Alpine roads. But considering the nature of some of the mountain passes, with their frequent curves, as well as the short distances between the town and the presence of herds of cattle in certain

Alpine districts, the reasonable automobilist is glad to conform to these regulations, inasmuch as the manifold charms of the country can only be truly enjoyed and engraved into the mind when a party travels at comparatively slow speed.

Switzerland is a member of the Association for International Triptiques. The Federal Department of the Interior gives to each foreign motorist entering Switzerland a booklet printed in four languages, containing the automobile regulations of each canton, and all particulars about customs, responsibility, traffic and itineraries are furnished by the General Secretary of the Swiss Automobile Club, Geneva, or the respective secretaries of the sections Lucerne, Zürich and St. Gall.



THE SHORT WAY FERRY

SHORTEST AND MOST DIRECT AUTOMOBILE ROUTE BETWEEN

SACRAMENTO—Sonoma—Napa—Oregon
Oakland—Los Angeles—SAN FRANCISCO

SAVE TIME—SAVE MILEAGE
SAVE MONEY

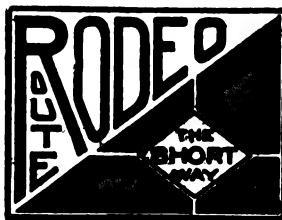
Travel via the "SHORT WAY FERRY" on the fastest and most modern AUTO FERRY BOATS afloat.

Two Boats—HALF HOUR SERVICE

EXCELLENT DINING SALOONS
Phones Vallejo 7F2 — Crockett 14F11
RODEO-VALLEJO FERRY CO.

AVEN J. HANFORD, Manager

Rodeo, California



NO CURVES—NO GRADES

TIME SCHEDULE		LEAVE VALLEJO DAILY	
LEAVE RODEO DAILY			
7:00 a. m.	3:20 p. m.	6:45 a. m.	2:40 p. m.
7:30 a. m.	3:40 p. m.	7:15 a. m.	3:00 p. m.
8:00 a. m.	4:00 p. m.	7:45 a. m.	3:20 p. m.
8:30 a. m.	4:20 p. m.	8:00 a. m.	3:40 p. m.
8:40 a. m.	4:40 p. m.	8:20 a. m.	4:00 p. m.
9:00 a. m.	5:00 p. m.	8:40 a. m.	4:20 p. m.
9:20 a. m.	5:20 p. m.	9:00 a. m.	4:40 p. m.
9:40 a. m.	5:40 p. m.	9:20 a. m.	5:00 p. m.
10:00 a. m.	6:00 p. m.	9:40 a. m.	5:20 p. m.
10:20 a. m.	6:20 p. m.	10:00 a. m.	5:40 p. m.
10:40 a. m.	6:40 p. m.	10:20 a. m.	6:00 p. m.
11:00 a. m.	7:00 p. m.	10:40 a. m.	6:20 p. m.
11:20 a. m.	7:20 p. m.	11:00 a. m.	6:40 p. m.
11:40 a. m.	7:40 p. m.	11:20 a. m.	7:00 p. m.
12:00 p. m.	8:00 p. m.	11:40 a. m.	7:20 p. m.
12:20 p. m.	8:20 p. m.	12:00 p. m.	7:40 p. m.
12:40 p. m.	8:40 p. m.	12:20 p. m.	8:15 p. m.
1:00 p. m.	9:00 p. m.	12:40 p. m.	8:45 p. m.
1:20 p. m.	9:30 p. m.	1:00 p. m.	9:15 p. m.
1:40 p. m.	10:00 p. m.	1:20 p. m.	9:45 p. m.
2:00 p. m.	11:00 p. m.	1:40 p. m.	10:15 p. m.
2:20 p. m.	11:30 p. m.	2:00 p. m.	10:45 p. m.
2:40 p. m.	12:00 p. m.	2:20 p. m.	11:15 p. m.
3:00 p. m.			

*EXTRA TRIPS SUNDAYS AND HOLIDAYS ONLY *11:45 p. m.



YOUR automobile is often subjected to rough handling, not only on the road but in the garage as well. Gasoline, grease, oil and grit all tend to mar the beauty and finish of your car. A coat of good varnish applied at the right time will often save painting. W. P. Fuller & Co. have every facility for manufacturing paints and varnishes. Their years of experience have produced a complete line of Automobile Necessities.

Speedite Auto Finish. Repaints and varnishes in one application.

Fuller's Auto Varnish. A superior varnish of unusual wearing quality and beauty of finish.

Fuller Auto Enamels. Made in six attractive colors.

Quick Repair Black Enamel. For retouching hoods and fenders.

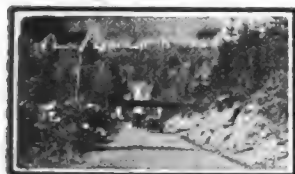
Sold by your dealer

W. P. FULLER & CO.

PAINTS FOR EVERY PURPOSE

"Since '49"

[In writing to advertisers please mention MOTOR LAND]



Hit the Trail for the North this Summer

You will have company all along the beautiful run over the Pacific Highway—Hundreds of California touring parties have written that they were coming this year.

Vancouver offers you something unique—a great Canadian city—fourth in the Dominion—in the midst of snow capped mountains—great forest parks—wonderful scenic beauties—all within a run of an hour or less from the city's center.

New Motor Tourist Camp—fully equipped—right in the city limits.

Canada Welcomes Tourists

At Boundary the customs official gives touring parties a 30-day Motoring Permit in British Columbia—No Bond or Deposit—No Head-tax.

COME TO VANCOUVER THIS YEAR

You'll find an ideal climate—no extreme heat—everything freshened by occasional showers—16 hours daylight motoring—Hundreds of miles of wonderful scenic drives.

Golfing, Fishing, Hunting, Mountain Climbing, Magnificent Beaches, Land and Water Trips without number.

SEND FOR 1922 VACATION FOLDER or any information specially desired. Free on request to Vancouver Publicity Bureau (J. R. Davison, Mgr.), Suite 200, 438 Pender St. W., Vancouver, B. C.

—for proper lubrication



2,000 lbs. pressure is necessary

The friction surfaces of many automobile bearings are less than 5-1000 of an inch apart, and of course the weight of the car and its parts rest and operate on these bearings—that is why tremendous *super-pressure* is absolutely necessary to lubricate these bearing surfaces properly. And that is why so much difficulty is encountered in trying to lubricate a car with the ordinary lubricating systems, many of which do not even claim to attain more than 500 lbs. You may think your car is properly lubricated, but is it? Are you getting 2,000 lbs. *super-pressure* direct to the bearings? You can with Critz, easily, without hose and without unwinding. Proper lubrication is important. Sooner or later you must do one of two things—lubricate properly, or pay a repair bill. Why wait? See a Critz *super-pressure* demonstration at your dealer, your garage, or at this factory, or write for Critz folder and address of our service station in your locality.

LATHAN AUTO SUPPLY CO.
1454-66 Pine Street, San Francisco, *Manufacturers*

Inexpensive Critz fittings quickly installed on any car. Or, where Alemite fittings are already installed, only a simple Critz adapter fitting is necessary to enable use of Critz super-pressure lubricator.

CRITZ

SUPER-PRESSURE LUBRICATING SYSTEM

HERE AND THERE IN MOTORDOM

Climbing Mount Wilson

Driving up the Mount Wilson trail with his car welded in high gear, Frank E. Benedict of the Benedict Motor Sales Company of Pasadena set a new record for the mountain trip. He cut four minutes from the best previous record, making the run in 22 minutes flat. Leaving the foot of the trail at 7:20 o'clock in the morning, Benedict checked in at the Mount Wilson hotel at 7:42 o'clock, clipping five minutes and fifty-one seconds from the former record.

Before leaving on the record breaking trip, Benedict had his Paige 666 Special welded in high gear. He was accompanied on his trip by Ed Moser of Pasadena and was followed at a more sedate pace by a press car.

For this trip Benedict had his car equipped with Coast Cord tires. According to Benedict they were of great help to him as the tread is of such a design as to assist in holding the car on the treacherous turns of the mountain road which were taken at a high rate of speed.

Benedict was started on his record breaking trip up the mountain by H. A. Martin, secretary of the Pasadena branch of the Auto Club of Southern California. Among others present were Homer L. Webber, C. Hal Reynolds, Joseph Fincher, Percy Griffin, Eddie Cousin, J. L. Krah, A. E. Arnold, photographer, and George Fugate and Clark Bogardus, both of the Pasadena *Star-News*, and E. Elliott, a Los Angeles newspaper man.

The Mount Wilson test is but one of a dozen similar gruelling records that Coast Cords have been piling up during the season. At the present time a Chandler car driven by Colonel King Stanley and equipped with Coast Cords is engaged in making a 10,000

mile test covering practically the entire United States. A Marmon car driven by C. E. Leebold is en route from Miami, Florida, to San Francisco, traversing some of the hardest roads in the country.

Traffic to Pacific Northwest

Designed to aid tourist traffic throughout the Pacific Northwest and California, the Admiral Line has made a deep cut in the cost of transporting automobiles from California ports to Victoria, B. C., and Seattle. Formerly these were handled as freight, but now, when accompanied by a passenger, they are classed as excess baggage and are charged on a baggage tariff.

The charge from Seattle to San Francisco is \$1 per 100 pounds; from Seattle to Los Angeles, \$1.50 per 100 pounds, and from Seattle to San Diego, \$1.60 per 100 pounds. The rates are collected on a minimum of 2,000 pounds.

The *Ruth Alexander* and *President* have special facilities for carrying automobiles and already the new tariff is being taken advantage of by many who, while willing to drive one way, shy at going both ways by automobile. The same tariff will apply to the *H. F. Alexander* when she enters the regular coastwise service of the Admiral Line early in July on the fast schedule between Puget Sound, San Francisco and Los Angeles. Cars are driven through the side of the vessel into the parking space and conditions of tide or height of wharf offer no inconvenience.

The regulations call for the draining of radiators before going aboard and the removal of gasoline.

A New Distel Wheel

In the latest design of Distel wheel, the Detroit Pressed Steel Company has succeeded in producing a wheel lighter than a wood wheel with demountable rim and at the same time a wheel that is able to flex and that takes an air chuck from any air hose. The Distel is composed of a tapered disc curved inwardly for some distance and has a rim riveted to it so that the side ring is inside instead of outside the rim.

C. H. L. Flinterman, vice-president of the Detroit Pressed Steel Company, points out the fact that car manufacturers have now accepted the disc steel wheel as a standard equipment proposition. The new Distel wheel, on account of its extremely light weight, can be produced at a much lower cost. Owing to its shape the disc acts just like a spring, flexing under excessive loads but always returning to its normal shape. This is very essential, for while its shock absorbing qualities are desirable, it is also necessary for the wheel to always return to normal after deflection. The resiliency in the wheel not only saves tire wear, but reduces vibration transmitted to the mechanism of the car.

The outside valve stem used in this new wheel is that of any standard inner tube, so that any air chuck may be used. There is sufficient room between the stem and disc to permit of using the largest size air hose chuck.

The light weight of the Distel naturally makes it desirable in the reduction of wheel inertia which reduces tire wear and makes starting and stopping easier.

A Notice

Instead of buying a new car next season, use Monogram Oils and Grease this season.

New York Lubricating Oil Co.

MONOGRAM
OILS AND GREASES

It's Your Motor's Life Insurance

SEQUOIA HOTEL

FRESNO
170 ROOMS



CALIF.

E. C. WHITE, Mgr.

SANTA MARIA INN

SANTA MARIA, CALIFORNIA

EVERY ROOM
WITH BATH



On the Coast Highway
between San Francisco
and Los Angeles

Official Hotel

MUSSO'S Auto Home CAMP BED

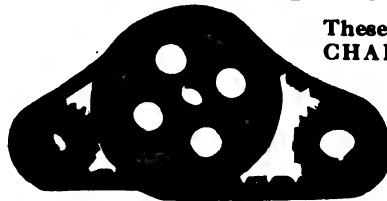
Known for
Comfort, Quality and
Convenience

Price Complete
\$67.50

Order from your dealer;
if he cannot supply you
order direct

MANUFACTURED BY
MUSSO OUTING EQUIPMENT CO.
196-192 West Santa Clara Street
SAN JOSE, CALIFORNIA

CADILLAC OWNERS!



These LINK-BELT SILENT CHAIN DRIVES have been

thoroughly tried out on CADILLAC CARS. They will give you quiet and satisfactory service for many thousand miles. They are in stock at San Francisco and Los Angeles

ready to be installed in your car. Order direct or through your garage.

The LINK-BELT UNIT SILENT CHAIN marks an important step forward in the art of Silent Chain Driving as applied to automobiles.

LINK-BELT PACIFIC COMPANY
168-2nd Street, San Francisco 161-3 No. L. A. St., Los Angeles

The Best Buick Ever Built

THIS IS THE OPINION OF THE EXPERTS WHO HAVE DRIVEN AND INSPECTED THE

6-55 Sport Touring
B U I C K

HOWARD AUTOMOBILE CO.

The Largest Distributor of Automobiles in the World
Van Ness Avenue at California Street, San Francisco

OAKLAND

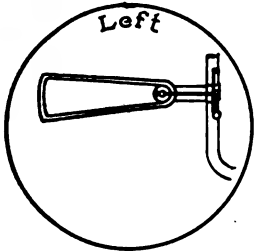
PROSPECT 4000

PORTLAND

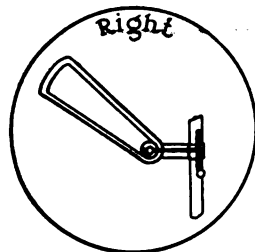
When better automobiles are built, Buick will build them

The Inter-State Auto-Signal

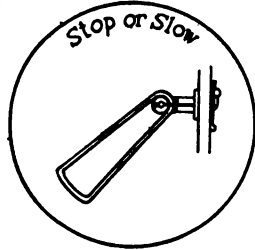
Positively Prevents Accidents



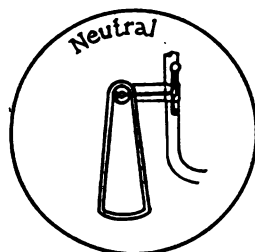
WHICH is preferable? Compare the cost of the *Inter-State Signal* with that for Collision Insurance. With the latter, one is reimbursed *after* the accident; with the former the accident is *prevented*. You should have both, just as you should have both of your hands free to drive your car.



The *Inter-State Signal* is endorsed by the Motor Vehicle Department of California. It complies with and meets all requirements of State Laws and City Ordinances.



The *Inter-State Signal* is attached to your windshield in 30 seconds.



The Semaphore blade is brilliantly and durably finished in target red enamel. Other parts enameled black.

Buy from your dealer. If he can't supply you write to us for descriptive literature, or mail check and the Signal will be sent to you post-paid with the GUARANTEE that your money will be refunded if you decide to return the Signal within 10 days.

PRICE \$5.00

When ordering, state whether for open car or closed car or what type of truck

Nothing to wear out

No repairs required

Always in sight of yourself, other drivers and pedestrians

Thrown in one second with one finger

No springs or complicated parts

No electro magnets

No draft on storage batteries

No cost for up-keep

No chance to FAIL

CALIFORNIA AUTO SIGNAL COMPANY

Distributors

1042 Polk Street, Corner Post

San Francisco

Phone Franklin 5488

Have it Installed —that's all!

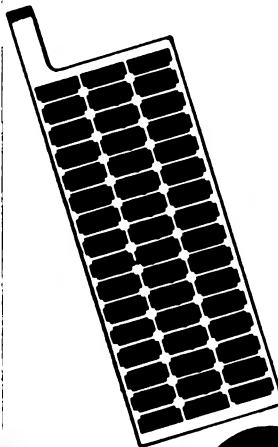
Just as soon as you have a Gill battery put in your car you can "rest easy." The Gill serves without faltering because it is made right.

There are no separators in the Gill battery. They are made unnecessary because of the individual construction—thick narrow plates, assembled crosswise. This construction prevents buckled plates, short circuits and overcharging.

Last year not a single Gill battery "came back" on account of plate trouble. Certainly this is an assurance of its economy and lasting value. There is a two year guarantee.

Write for our illustrated folder.

*The Gill
perfected, high,
narrow and
thick plate*



LLOYD BROS.

DISTRIBUTORS

1424 Harrison Street
Oakland, Cal.

Gill Storage Battery Company,

Inc.

San Bernardino, Cal.

NOTICE to DEALERS

Write us for territory that is still available. It will pay you.

Gill
BATTERY
THE ONLY BATTERY THAT HAS
SUCCESSFULLY ELIMINATED
Separators

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SALINAS DISTRICT:

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SAN JOSE DISTRICT:

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VALLEJO DISTRICT:

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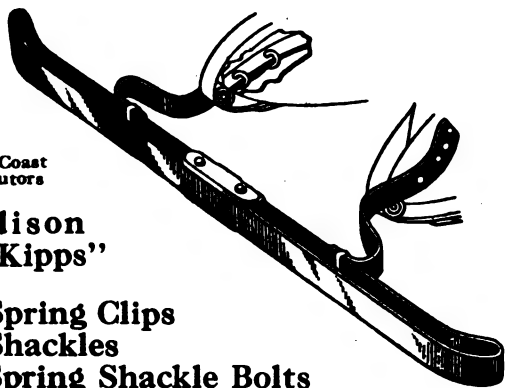
Adams Springs..... Lake County	Campbell..... Campbell Garage	Reparto..... Central Garage	Hayward..... Pergola Restaurant (between Hayward and Dublin)
Adin..... Hotel Adin	Camptonville..... Meek Mercantile Co.	Etna Mills..... Blake Hotel	Hayward..... Hayward Garage
Adin..... Adin Garage	Carl Inn..... Carl Inn Hotel	Eureka..... Hotel Vance	Hayward..... Hotel Plaza
Aetna Springs..... Napa Co.	Carmel by the Sea..... Hotel La Playa	Eureka..... Eureka Garage	Healdsburg..... Central Garage
Alturas..... Hotel Niles	Carmel..... Highland Inn	Fairfield..... Solano Garage	Healdsburg..... City Garage
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Alvarado..... Reliance Garage	Carville..... Carville Hotel	Fair Oaks..... Fair Oaks Garage	Hollister..... Thompson's Garage
Anderson..... Tillman Bros. Garage & Machine Shop	Castella..... Craig View Hotel	Fall River Mills..... Pioneer Garage	Hopland..... Duncan Springs
Angels Camp..... Angeles Hotel	Chico..... Hotel Oaks	Felton..... Felton Hotel	Hopland..... Lambert's Garage
Angels Camp..... City Garage	Chico..... Chico Garage	Ferndale..... Ford Service Garage	Hood..... Hotel Netherlands
Antioch..... Brun's Resort	Chico..... Richardson Springs	Folsom..... People's Garage	Hornbrook..... Hornbrook Garage
Applegate..... Walmond Resort	Chinese Camp..... Chinese Camp Garage	Forest Glen..... Forest Glen Inn	Huntington Lake..... Huntington Lake Lodge
Arbuckle..... Arbuckle Hotel	Chowchilla..... Chowchilla Hotel	Forestville..... Cash Garage	
Arbuckle..... Almond Garage	Cisco..... Cisco Hotel	Fort Bragg..... Fort Bragg Garage	
Arcata..... Arcata Hotel	Clements..... Service Garage	Fort Jones..... Scott Valley Garage	Ione..... Ione Garage
Arcata..... Plaza Garage	Cloverdale..... Cloverdale Garage	Fortuna..... Fortuna Garage	Irvington..... Irvington Corner Garage
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Atwater..... Atwater Garage	Cloverdale..... McCray's	Fowler..... Hughes Hotel	Jackson..... National Hotel
Auburn..... Freeman Hotel	Clovis, C. W. M. Smith & Son Garage	Fresno..... Hotel Fresno	Johnsonville..... Canyon Inn Resort
	Coalinga..... Coalinga Service Station	Fresno..... Sequoia Hotel	
Bartlett Springs..... Bartlett Springs Hotel	Coalinga..... Hotel Fox	Fresno..... Valley Grill (restaurant)	Kelseyville..... Dunbar Garage
Bass Lake..... The Pines	Coarse Gold..... Coarse Gold Hotel	Fresno..... A. C. B. Garage	Kerman..... Plaza Garage
Ben Lomond..... Hotel Dickinson	Colfax..... Colfax Garage	Fresno..... Central Garage	King City..... Hotel Camino Real
Bend, Oregon..... Pilot Butte Inn	Colusa..... Universal Garage	Fresno..... Don Lee Garage	King City..... El Camino Garage
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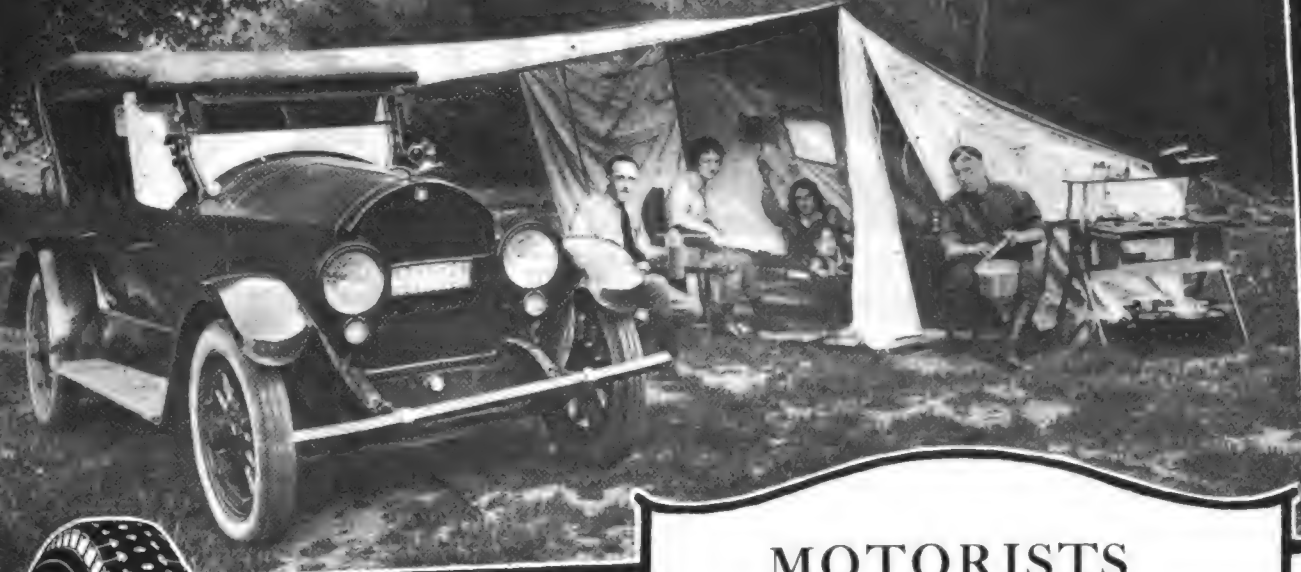
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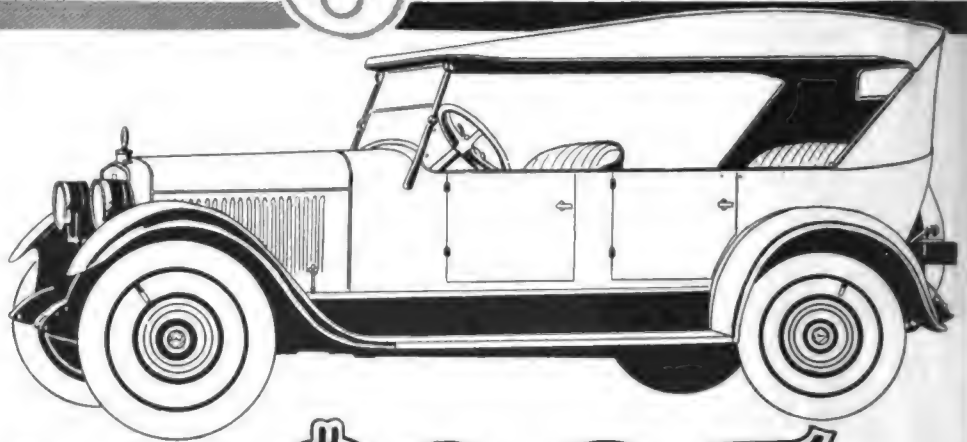
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AUGUST, 1922

Number 2

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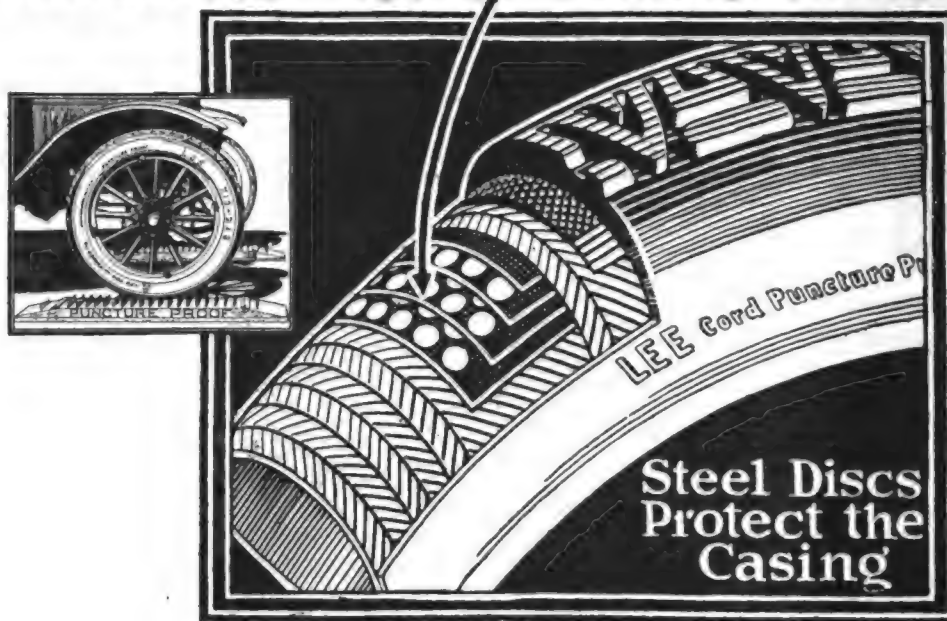
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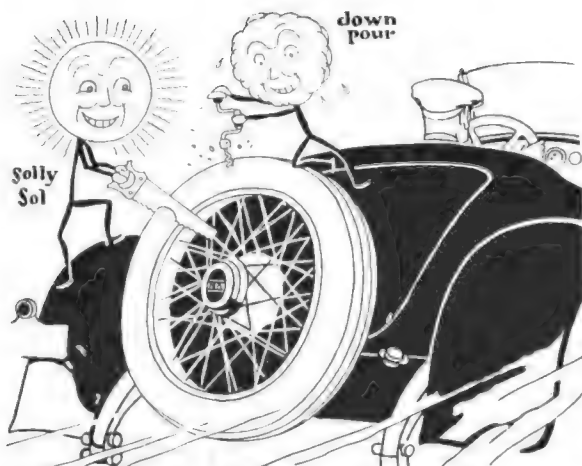
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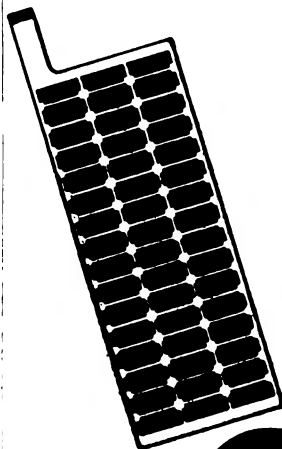
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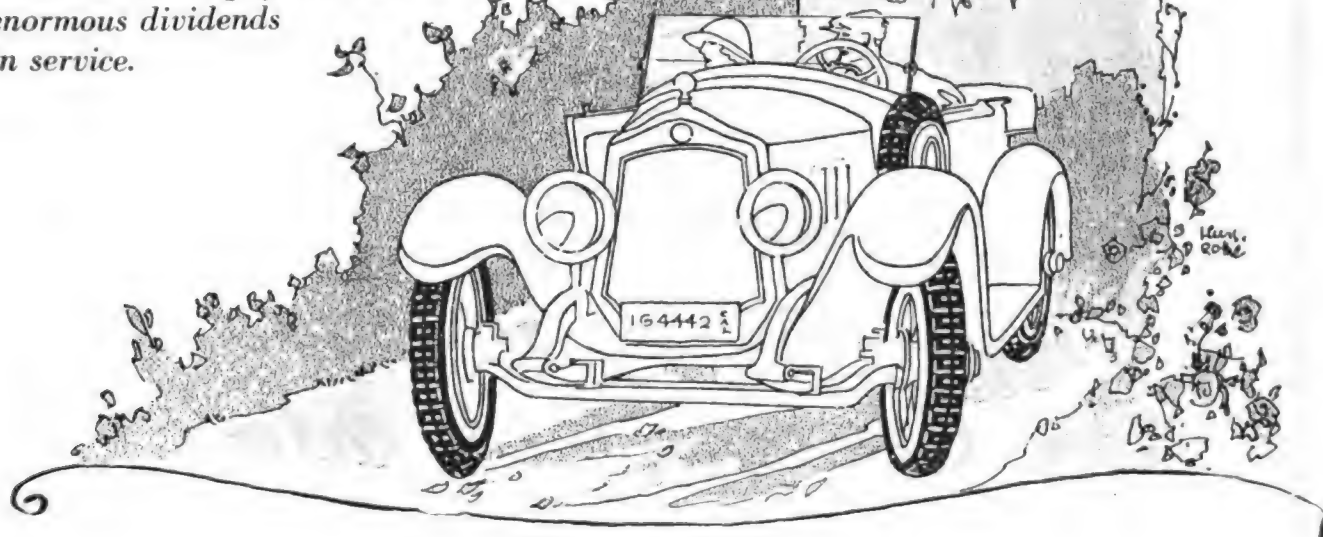
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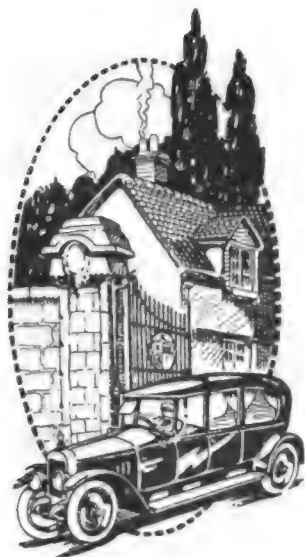
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CURRENT



COMMENT

The Results of the Dyer Anti-Theft Law

THE Dyer anti-theft automobile law has proved its efficacy in the recovering of stolen motor cars. Since the passage, in October, 1919, of this measure 2,120 automobiles, worth at fair valuation \$2,567,208, have been recovered by the Bureau of Investigation, United States Department of Justice, according to figures compiled by that bureau at the request of officials of the American Automobile Association. The department, according to these figures, has investigated 2,391 cases, which involved 4,385 persons. There were 2,733 persons arrested, of

whom 1,533 were indicted and 1,113 convicted. These convicted persons received sentences amounting in the aggregate to 2,356 years, 6 months, 11 days and paid fines to the amount of \$41,140.

Any doubt as to the need for such a measure is dissipated by the presentation of the above figures, which show a material reduction in the percentage of motor cars stolen since the law went into effect.

The outstanding feature of the Dyer law is the fact that it places interstate transportation of stolen motor vehicles

under Federal law and makes such an action punishable in Federal courts. Before the passage of this act there had been built up a great and growing traffic in stolen motor vehicles, conducted by bands of unscrupulous men who maintained assembling factories at various points and who, through their ability to transpose parts of various machines, one to the other, were able so to alter a stolen car as to make it practically unrecognizable to the original owner. State laws were inadequate to reach these men and the Dyer bill filled a long-felt want.

Forest Fires and Motor Campers

WITH the advent of August and midsummer comes the increasing menace of the forest fire. As the motorists who camp now outnumber the campers who go afoot, upon them is placed the major portion of the blame for these costly conflagrations.

The Forestry Department of the State of Massachusetts, in a statement issued recently, declared that the motorists of the country are the ones re-

sponsible for a great portion of the forest fires of today, and charged the losses to neglect in extinguishing campfires and to the habit of tossing lighted matches, cigar and cigarette stubs into the brush along the line of travel.

The national forests are growing less and less every year as the devastating force of the forest fires makes itself felt. These forests are the vacation grounds of the motorists, and much of the

charm and enjoyment of motoring will vanish with the disappearance of the beauty of the national playgrounds.

The thoughtful motorist will see that his campfire or match or cigar or cigarette stub is extinguished before he allows it to go about a riot of destruction. Millions of dollars are lost every year through forest fires and the greatest portion of this loss is due to careless campers. It is something to think over.

Courtesy for Drivers and Pedestrians

A GREAT deal has been said of courtesy in driving. Perhaps it is now time to impress on the pedestrian that he, too, may be courteous in his perambulations about the city streets.

The winner in a newspaper "code of courtesy" contest for automobilists, after giving a set of rules for the conduct of drivers, added these for pedestrians:

Be reasonable with motorists in

crossing a thoroughfare; share with them the responsibility for your safety.

Whenever possible, hurry across the street. Accept the courtesy of the motorist stopping to let you pass, in such a manner that he will be encouraged to extend the courtesy to others.

Remember that the motor vehicle is being driven by a human

being, with rights on the street equal to yours, who may be more solicitous for your welfare than you are for his.

They are good rules, presenting, as they do, an angle of the traffic problem that is not often given consideration. If pedestrians acted on them oftener than they do, they might soon find a marked change in the conduct of automobile drivers toward them.

OFF THE BEATEN TRAIL

A Few Tours About the Less-Known Scenic Attractions of California

By VONARD FRASER

WITH the increase in motor vehicles in California and the consequent overcrowding of the main aisles of traffic, tours that permit the use of the less-crowded thoroughfares are much in demand; and here in California, where the byways are as attractive as the main-traveled highways, there is an abundance of scenic lure which the average motorist fails to enjoy if



In the picturesque hill country of San Mateo there's many an enjoyable tour "off the beaten trail"

he is one of those who only "follow the crowd."

True it is that the byways of travel are often unpaved, and to one accustomed to the smooth concrete, the suggestion of a rougher trail might prove a shock; but to the true lover of nature the country road, whether graveled or of the old-fashioned type, ungraded, is as great an attraction as is the concrete pavement of the main highways.

Today the major portion of the motor traffic in California is routed over the Coast and Valley routes south and over the Redwood Highway and the east and west side highways north. As a general rule, the condition of the laterals connecting these great highways is not of the best, as these await the accumulation of additional millions before construction can be begun.

Little-Heralded Routes

Enough has been said and written of the Yosemite roads; the Wawona, the Coulterville, the Big Oak Flat and the

Tioga Road have each come in for their meed of praise. In the southern part of the state the beach highways, the road to Tia Juana and the mountain highway to Big Bear stand high in popular favor. What, then, are the objects of interest off the beaten trail and where are these routes that, little heralded, nevertheless deserve their traffic tribute?

One of the greatest of these vacation tours that may be made off the beaten trail lies in the northeast corner of California, in a district made famous in the early days by the fact that it was the last stronghold of the Indian tribes. It was here that a handful of braves held out against the armed forces of the United States Government for years, and probably would have been able to resist indefinitely except for dissension within their own camp and a lack of sufficient food and ammunition.

Here are the famous lava beds of Modoc County; Fort Bidwell, the great supply point of the northwest

territory in the fifties; and, nestled in a basin of the hills, a chain of lakes that provides everything there is in the way of fish, while the hills themselves are stocked with the big game for which California was once so famous.

An Ideal Vacation

If I were routing an ideal summer vacation "far from the madding crowd's ignoble strife," I would drive north over the newly completed river route to Sacramento, via Rio Vista and Isleton, and cross and recross the Sacramento River over those quaint little ferries maintained by the county. From the capital I would drive due north by way of Grass Valley and Nevada City and over the Sierras by Downieville and Sierra City; then on to the north again to Olio, and Beckwith, and Constantia, and Honey Lake. Susanville would be the next objective. Then northward again by way of Horse Lake and Termo until Alturas was reached. This is the gateway to the Modoc lava-bed country.

If you wish to travel farther into the region of the north, little explored by the motor car, continue on to Lakeview and then due west to Klamath Falls. This will bring you home by one of the beaten trails over the Siskiyou and under the shadow of Shasta into the great Sacramento Valley.

Circuit of Clear Lake

Many a motorist has made the circle of Lake Tahoe, but few there are who may boast of having made the circuit of the largest body of water in the state, Clear Lake in Lake County. It is an excursion that affords an interesting panorama at almost every turn of the highway. It is best started from Hopland over the newly graded and graveled road that enters Lake County at a real inspiration point. Just eight miles from Hopland the motorist reaches the summit, and from a broad platform he looks over range after range of rolling hill country with Mount Konockti, inspiration of many of the legends of the Lake County Indians, standing like a sentinel at the lower end of the lake.

From this point the road winds down in gradual descent to the shore of the lake. The circuit is best made toward Kelseyville and Lower Lake and then over the mountains to Wilbur Springs, Colusa County. Turn to the northward at Venado and drive on to Leesville. This is a quaint little town, now practically deserted but once a thriving village in the days of the gold rush. It was the central supply point for travelers journeying from the mining district to the coast counties, and it was a great place for big-game hunting.

Now you can buy the whole town, if you wish, for a few hundred dollars. When the Ukiah-to-Tahoe Highway is completed and paved, however, it will again be an important point, standing as it does midway on the route between Williams and Clear Lake.

From Leesville you drive westward, passing through Hough and Bartlett Springs, both world-famous resorts, now off the beaten trail because paving operations of the State Highway Commission have not as yet found their way thither. From Bartlett Springs the road winds over the tops of the mountains, and from the summit as the car turns for the descent is a panorama

vast in its extent and incomparable in all California.

Tahoe has few vantage points for the motorist to drink in the great panorama of lake and mountain in the natural basin of the hills, but Clear Lake has many points along the road where from the machine the passengers may enjoy a remarkable vista. Then on to Upper Lake and Lakeport again and the circuit of the lake is completed.

Central Coast Section

There is a remarkable little stretch of highway that some day will be one of the favorite vacation grounds of the central coast section of California. It lies in the canyon formed by Putah Creek and is reached by way of the highway at St. Helena through Chiles Valley. The road follows along the banks of the creek through a tangled wilderness that reminds one of the picturesque Russian River. To be sure, there are no redwoods, but there are oaks and poplar and linden that in their gracefulness surpass the Ionic severity of the sequoia and add considerably to the sylvan loveliness of the scene. Its delights have yet to be exploited, for it is one of the roads off the beaten trail of traffic.

Most motorists are familiar with the scenic California Redwood Highway that follows the El River northward through Mendocino and Humboldt counties and reaches the coast in Del Norte County. I wonder how many have made the tour of the coast country by the real coast highway, the highway that gives you, every step of the way, an ocean view, a vision of dashing spray and white-foaming breakers sweeping against the rugged coast. Some day California will pave



The lava beds of Modoc County form a weird sky-line



Off the beaten trail on the road to Susanville, above Lake Almanor

this real coast highway that will be a coast highway in more than name and will follow the ocean-shore line from the Oregon line to Lower California. Now we motor by "Coast route" to Los Angeles and we go three-fourths of the way before we have a sight of the sea.

The coast road may even now be traveled comfortably from Crescent City to Tomales Bay, yet few use it because of the speed and ease of locomotion possible on the state road that goes through Ukiah and Willits and Garberville and Healdsburg. Yet it is smoother for the most part than a great deal of the regular coast highway and it winds through the canyons and over the tops of the low-lying hills that border the ocean for mile after mile. There is a strange aloofness about traveling this road down the coast line. There is a silence about the road that contrasts strangely with the vocal quality on the main state road. Fern and bracken make this district their dwelling place, and the redwood groves, not as gigantic in respect to individual trees as those along the California Redwood Highway, but denser in foliage and moss-covered from the dews of the long nights, lend a weird beauty to the trip that can scarcely be equaled on any other roadway.

Then the wide vistas of the sea, as rugged a coast line as one might imagine, are unparalleled in scenic magnificence. Point Arena with its treacherous rock-bound shores which have been the burying ground of scores of ships, Albion with its gigantic lumber stores and its chutes where the logs come booming down from the hills to the devouring saws, Fort Bragg and its panoramas of sea and mountain and crag, and Fort Ross and its reminiscences of the days when the Russian Czar looked greedily on the untold wealth of the Californias, these are only a few of the places where you may pause and drink in draughts of beauty, a beauty distinctly Californian and imbued with the spirit of the West.

A New Vacation Land

Sometime in the future when Uncle Samuel finds a little spare change in his jeans, a new vacation land will be opened to the motorists of California in the region of the highest mountain peak in the United States, Mount Whitney. Roosevelt National Park, as the new park will be named, is a region grander in its heights and distances than the Yosemite. Now its beauties are reserved for the camper and hiker who follows the narrow trails from the Sequoia National Park or out from Fresno via General Grant National Park. A third way of approach is by the highway through Independence



Motoring on the desert wastes near the Nevada line

which connects with the Tioga Pass Road of the northern Sierra country.

The beauties of California will not be thoroughly exploited for motor traffic until the coast line road and the road through the passes of the Sierras are completed and graded if not paved. The snow-crowned peaks that extend from Whitney to Shasta and the rocky coast from the Oregon line to the Lower California peninsula offer scenic vistas which can be rivaled nowhere else in the world. The Riviera or the Swiss Alpine region can offer nothing more sublime, nothing more inspiring for the tourist, and roads passable even now to motorists during the summer season afford opportunities for touring which few motorists seem inclined to take.

The reason for the comparatively small traffic which goes over these two great scenic routes of California is that motorists do not feel inclined to travel

at a snail's pace in going from point to point. Neither of these routes can be driven at an average pace in excess of twenty miles an hour. But if you take into account the wonderful attractions in the way of scenic panoramas which are unfolded as you drive, you can sacrifice speed for beauty. A vacation trip to be restful should not be made at a speed in excess of twenty miles an hour, anyhow; so this limitation of speed need not be a drawback in taking either of these highways off the beaten trail of traffic.

A month of traveling on the road from Independence to Tahoe and the northern Sierra Nevadas would prove a month of thrills, not thrills from dangerous driving but the thrills which beauty of landscape lends to the mind's eye. The development of accessories for camping purposes has made possible the halt wherever the shades

(Continued on page 26)



With The Organized Motorists

Motorists Join Greater Northern California Campaign

The Organized Motorists of Northern California have pledged their support and co-operation in the nation-wide publicity campaign to exploit the agricultural, industrial and tourist attractions of California north of the Tehachapi. By resolution the Board of Directors of the California State Automobile Association, representing 30,000 motor-car owners, has approved the program outlined and pledged its support. Its president, George S. Forderer, is a member of the Executive Committee in charge of the drive for \$400,000.

The resolutions adopted follow:

WHEREAS, One of the major activities of the California State Automobile Association, since its organization, has been the promotion and encouragement of automobile tourist traffic into Northern California; and

WHEREAS, In this work the Association has annually served the touring wants of thousands of visiting motorists from other states, has erected over 5,000 steel road signs directing motor tourists to this section of the state, and over 35,000 for their guidance and convenience within the borders of Northern California; and

WHEREAS, There has been inaugurated a Greater Northern California movement having as its object a nation-wide publicity campaign to exploit the agricultural, industrial and tourist attractions of California north of the Tehachapi; therefore

Be It Resolved by the Board of Directors of the California State Automobile Association that this forward movement be given hearty support and be accorded full co-operation, and

Be It Further Resolved, That the work of this organization in encouraging motor-tourist travel through promotion of improved highways, fair laws, more ideal motoring conditions, and the erection of road signs be continued in the future on an even broader scale than in the past.

* * *

Automobile Club to Open New District Office

The California State Automobile Association is completing arrangements to open its twelfth district office at Marysville, according to an announcement made by President George S. Forderer.

The opening of this office will bring to Association mem-

bers in Yuba, Sutter, Colusa, Nevada and Sierra counties all of the service of the organization, which now has a membership of 30,000 motorists. In addition to providing direct service to its members in these counties, the Marysville office will provide another point of direct contact for the touring member.

L. E. Cutler, formerly attached to the Sacramento office of the Association, has been appointed manager of the Marysville office, and Field Secretary F. V. Dewey, Jr., is now engaged in selecting a convenient location.

The five counties now given direct service by the Association were formerly served through the Sacramento office. The California State Automobile Association, in addition to the Marysville office, maintains district offices at Chico, Fresno, Modesto, Oakland, Salinas, San Jose, Redding, Sacramento, Santa Rosa, Stockton and Vallejo.

In line with the expansion policies of President George S. Forderer the Association has opened its eighth Touring Bureau at Susanville, Lassen County. This touring bureau has been opened in response to the demand for Association touring service in this large section of the state where the organization heretofore has not maintained direct service. Touring bureaus are now maintained by the Association at Coalinga, Eureka, Hanford, Napa, Santa Cruz, Yosemite and Merced.

* * *

Protection of Big Trees by Means of Fences

The Board of Directors of the California State Automobile Association have taken the initial step towards providing protection for the big redwood trees of Northern California.

Reports have reached the Association that such big trees as "General Grant" and "General Sherman" are being damaged by motor tourists who visit these attractions in increased numbers each year.

The directors of the Association have ordered its Engineering Department to obtain an estimate of cost of erecting fences to insure proper protection of these trees.

These redwoods, many thousands of years old, are still growing, but motor tourists, according to reports received by the Association, are visiting these attractions in such large numbers that continued growth is being retarded.

Upon receipt of the estimate of cost at its next meeting the board will take the action of protection up with the Federal authorities and endeavor to bring about the erection

of suitable fences and the placing thereon of appropriate tablets descriptive of the trees.

Initial Steps Taken for Golden Gate Highway

The initial step in bringing about the improvement of the proposed Golden Gate Highway following the shore line from the foot of Van Ness Avenue through the Golden Gate at Old Fort Point to a connection with existing roadways in Lincoln Park has been taken by the California State Automobile Association. The Association through its president, George S. Fordner, has brought the matter officially to the attention of the Street Committee of the Board of Supervisors of San Francisco in the following letter:

"This Association has become quite interested in a project of building and improving a highway following the shore line from the foot of Van Ness Avenue through the Golden Gate at Old Fort Point to a connection with existing roadways in Lincoln Park. This we have called the Golden Gate Highway.

"The project particularly appeals to us because it would be a boulevard of exceptional scenic attraction and would make it possible to show what everyone visiting California wishes to see—the Golden Gate. We do not believe the cost would be as excessive as an off-hand opinion would indicate, for it is possible even now to drive

most of the distance in a machine.

"Practically all of the project is within the military reservation and no difficulties should be experienced in securing rights of way.

"We would very much appreciate your causing to be made a reconnaissance survey of this project, determining whether or not the military authorities will grant the necessary rights of way or otherwise co-operate, and if possible fitting it into your plans for the improvement of a boulevard along the Marina."

Chairman Joseph Mulvihill of the Street Committee has promised an early inspection of the project and the authorization of a reconnaissance survey.

GREAT INCREASE IN GASOLINE PRODUCTION

THAT the hum and purr of the automobile engine is more audible than ever, and that all America has taken to wheels, is indicated by the announcement by the Bureau of Mines that gasoline stocks in the United States, which have been steadily mounting to new high record marks, are now on the decline. On June 1, stocks on hand at the refineries amounted to 856,607,102 gallons, which is 35,661,000 gallons below the record figure of 892,267,766 gallons attained at the beginning of May. The fact that the billion-gallon mark, forecasted in some quarters, was not reached seems due to the tremendous increase in domestic consumption of gasoline, which amounted to 499,242,343 gallons in May. This figure represents an increase in domestic consumption of gasoline of 113,000,000 gallons over the month of April and 145,000,000 gallons over the month of May, 1921. Gasoline consumption figures for May constitute a record for that month, and are within four million gallons of the record-setting figure attained in August, 1921, although

occurring three months before the customary month of largest consumption.

Production of gasoline in May amounted to 513,658,966 gallons, an increase of 41,000,000 gallons over the month of April. The sharp increase in gasoline consumption, however, was sufficient to offset the increased production and to inaugurate the seasonal decline in stocks a month earlier than it usually occurs.

Reports to the Bureau of Mines show that 315 refineries operated during May, an increase of 12 as compared with the previous month. Plants reporting during May were running an average of 85 per cent of their daily indicated capacity.

Exports of gasoline for May amounted to 55,823,839 gallons; imports were 7,104,879 gallons; and shipments to insular possessions were 1,358,327 gallons.

Production of fuel oil set a new record in May, amounting to 936,742,331 gallons. The previous monthly production record of this product was 859,000,000 gallons, attained in December, 1921. Stocks of gas and fuel oil on

hand June 1 were 1,321,437,972 gallons, an increase of 38,000,000 gallons over the previous month.

Of interest to automobile users is the announcement that stocks of lubricating oils showed a decrease of 10,837,000 gallons from the figures for the previous month. The production of lubricants in May amounted to 79,848,372 gallons, an increase of approximately 7,000,000 gallons over April, but increased consumption of these products effected a reduction in stocks to a figure of 226,293,334 gallons as compared with 237,229,814 gallons on hand May 1. It is estimated that approximately 60 per cent of the lubricating oils produced are consumed by automobile users.

Stocks of kerosene on hand June 1 amounted to 318,890,131 gallons. Production and stocks of kerosene show a decrease for the month of May, stocks having reached the lowest point since September, 1919. Export shipments of kerosene in May amounted to 63,000,000 gallons, which is 17,000,000 gallons less than for April.

TRACTION RESISTANCE OF ROADS STUDIED

INITIAL results secured from an investigation of the traction resistance of roads indicate that information will be secured of great value to the highway engineer and the user of motor transport. The investigations are being carried on under the auspices of the Advisory Board of Highway Research of the National Research Council, with which the Bureau of Public Roads, United States Department of Agriculture, and the Quartermaster Corps, United States Army, are co-operating.

One phase of the investigation shows that there is a great difference in the power required of the engine when a

truck is traveling over different types of surfacing, the amount being more than twice as great on some of the lower types when compared with that on higher types. It is also shown that the power required to overcome the road resistance is not proportional to the speed of the vehicle and after a certain speed is reached it increases very rapidly.

The investigation when complete will cover tests with various types of motor vehicles with the load, tire, and spring equipment varied on different types of surfacing and at varying speeds. The data will include gasoline consumption, internal engine resist-

ance, wind resistance, and road-surface resistance.

When carefully analyzed it will aid the highway engineer in determining under a given set of conditions what type of surface should be built for a given volume of traffic to result in the least total cost for road and vehicle operation. The same sort of study will be made as to expenditures for grade reduction to reduce operating costs.

The truck operator will be given valuable information on the effect of tire and spring equipment, lubrication, size of load and speed of vehicle on fuel consumption which should aid him in producing cheaper transportation.



WILL SMITH was driving home one night—
A tire gave up the ghost;
He skidded wildly round a turn
And grazed a healthy post.

He saw he would be some delayed
In reaching home and wife,
And so he tried a nearby phone
To tell his "storm and strife."

Now wife was suspicious, too,
About her loving mate
And figured Mr. Volstead's law
Was in a helpless state.

So when friend hubby called her up
And whispered on the wire,
"A little blowout keeps me here,"
She queried: "Hootch or tire?"

* * *

The Warning Note

The tourist camps are ready,
Dame Nature's calling out,
"Help yourself to scen'ry,
To bass and pike and trout."

A glad good-by to Worry,
And on your lips a song,
But be a wise bird, brother,
And take that spare along.

* * *

The Way of a Man With Two Maids

When Jimmie takes his sister out
A-riding in his flivver
He uses both his arms to steer,
And drives without a quiver.

But when he has his fav'rite gal
Beside him in his lizzie,
One arm is on the steering wheel—
The other one is busy.

* * *

The Perils of Touring in Florida

(From the Titusville, Fla., Advocate)

One of the elephants recently in Titusville, while traveling to Melbourne on the Dixie Highway, did not like the looks of an auto driven by Trainman Rodriguez of New Smyrna, and chased the auto half a mile. To escape the pachyderm the car was run into the palmettos alongside the road.

Concerning Bonnie

My Bonnie once hired a new chauffeur,
A handsome young devil was he;
They flirted while driving one evening—
Oh, bring back my Bonnie to me.

* * *

Motor Mottoes

Still motors run sweet.
Home is where the car is.
A soft tire turneth away cash.
While there's gas there's hope.
Fools pass on hills and curves.
A wise driver maketh a glad auto.
It is better to be slow than sorry.
Declines make the wheels go faster.
Dry springs squeak louder than "birds."
To speed is human; to get caught a fine.
As the wheel is bent so the car will go.
Where there's a nail there's a puncture.
A body's as old as its paint; a motor's as old as it pulls.
Spin and the world spins with you; stall and you stall alone.

* * *

California has a man who has almost lost faith in his flivver. At least he is badly discouraged, though he still has a little hope she will redeem herself.

Here is the way he recently told his tale of woe to Charles J. Chenu, Director of the State Division of Motor Vehicles:

The Flivver in question has been an invalid for the past two years, spending two-thirds of the time in car hospitals. Instead of being a joy-rider she has become a joy-killer.

I know she is strictly feminine because it takes all of my substance to keep her going. She was the first one in the family to take the flu early in the winter. In fact, I caught it myself trying to operate on her in an open shed where there was a generous circulation of cold, damp air.

On March the 12th, she answered to an operation and coughed up eight miles, took a relapse, and is under the doctor's care again. I realize that decorating her with \$8.80 worth of plates is like buying a wreath for a dead one, but as she has saved me in times past from becoming an I. W. W. and being called a footpad by hauling my blankets from job to job, I am willing to make the sacrifice to save her dignity.

However, I am too near the end of my bank roll to spend any more on her at present, and if you can not forward the plates under present conditions, just return my check, and I will begin proceedings of divorce—in the Junk Court—from Liz.

Respectfully yours,

THE SIERRA-TO-THE-SEA HIGHWAY

Dream of Mid-California for Outlet to the Ocean Close to Realization

WITH the dedication ceremonies held at Hanford on July 4 to celebrate the completion of the 48-mile section, Hanford to Coalinga, of the "Sierra-to-the-Sea" highway, the long dream of mid-California for a highway outlet westward to the ocean shore and eastward to the high Sierras was brought close to actual realization.

The "Sierra-to-the-Sea" highway, or, as it is sometimes called, the "Mount Whitney-to-the-Sea" highway, is one of the most important cross-state highways now under construction as a part of California's highway system.

Originating at Giant Forest, in the Sequoia National Park, under the shadow of Mount Whitney, the highest mountain peak in the United States, it traverses the rich fruit-growing and dairy counties of Tulare and Kings, the Coalinga oil fields of southern Fresno County, and has outlet to the shores of the Pacific Ocean through Monterey and San Luis Obispo counties.

Five Counties Celebrate

All five of these counties joined hands in the celebration which was held on Independence Day at Hanford. The far-sighted citizens of all five counties have long worked toward the planning and completion of this highway, and the celebration held a spirit of rejoicing which spoke in no uncertain terms of their appreciation of progress made.

Tapping as it does the very center of the rich and rapidly populating San Joaquin Valley, and bisecting the state at a point almost exactly midway between San Francisco and Los Angeles, it is a highway of marked importance both for pleasure and commercial traffic. Commercial men have long realized the necessity of such a cross-state road. At the present time traveling men out of San Francisco drive into the San Joaquin district and double back down the coast line to Paso Robles or San Luis Obispo and double back again. The "Sierra-to-the-Sea"

highway will obviate the time and money-costing inconvenience of this "doubling back." Likewise out of Los Angeles, which is reaching into the mid-California district, it will afford a similar attraction as a time and money saver.

But the attraction of greatest importance to the residents of the great interior valley is the opportunity it will afford of easy access to the cooling ocean breezes. With the seacoast within a four- or five-hour automobile drive over paved highways, living in this rich valley, particularly during the heated summer period, will be given a vastly increased attraction.

The Only Outlet

For years the only outlet westward has been across sandy desert stretches and rough mountain roads. Only the most daring and most careful drivers attempted the trip. Paved highways with easy grades will open the coast resorts and their attractions to easy access, families will establish summer homes on the ocean shore, and busy heads of families, tied at home through the fruit season which means the valley's greatest wealth, can "week-end" in the cooling ocean breezes with little inconvenience.

Eastward the "Sierra-to-the-Sea" highway opens up one of America's greatest wonderlands, not only to valley residents, but to all the ever-growing tourist travel of California. Its eastern terminus is Giant Forest, in Sequoia National Park, where not only "General Sherman," the greatest living tree now known, but thousands of the gigantic redwoods which are to be found in no other part of the world, afford an attraction which will draw

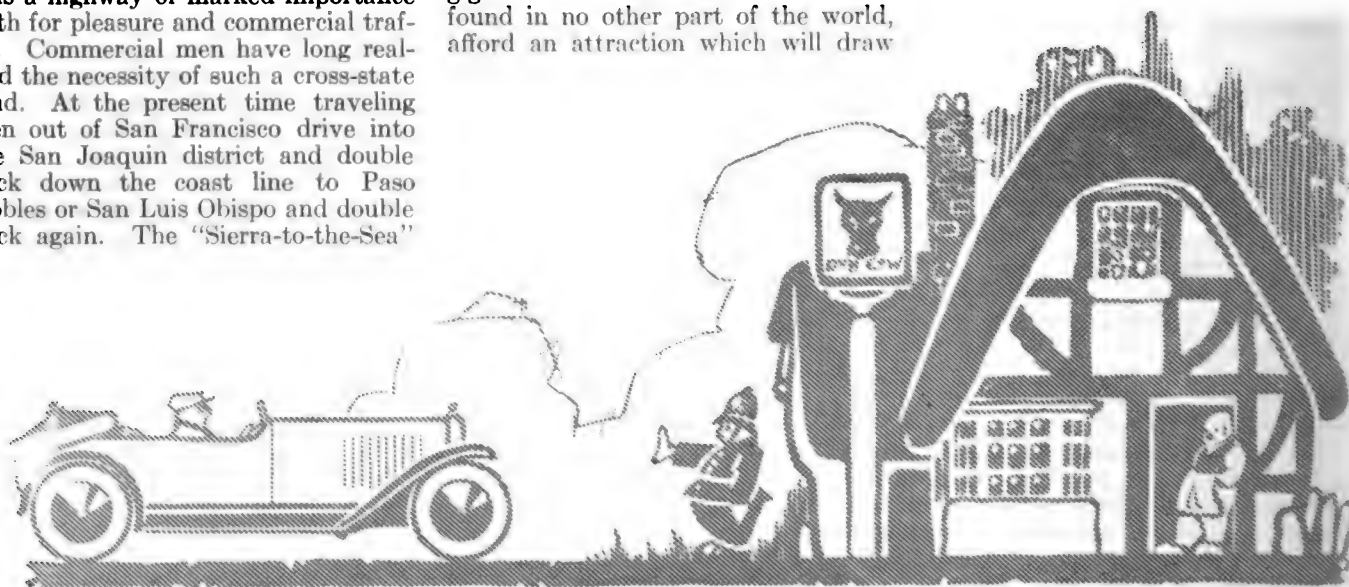
countless thousands over the road when eventually completed.

With the opening of the Hanford-Coalinga section, nearly 200 miles of this highway, from Monterey to Mount Whitney, is either completed and open to use, or under construction. Only one link, a 40-mile section west of Coalinga through the Coast Range mountains, remains now to be built. A 20-mile section from Three Rivers in Tulare County, the present eastward end of the completed highway, is now being built by funds furnished jointly by the national government and the state. A 12-mile section from San Lucas, on the coast highway, eastward toward Coalinga, is now being constructed by the State Highway Commission. The 53-mile section from Three Rivers to Hanford, through Tulare and Kings counties, and the 48 miles from Hanford to Coalinga, through Kings and Fresno counties, are finished, as is the 65-mile section from San Lucas to Monterey, in Monterey County, and the coast highway southward to Paso Robles and San Luis Obispo in San Luis Obispo County.

Travel Increases

With fairly good mountain roads out of Coalinga toward Paso Robles, and northwestward toward Monterey, travel this summer is already many times heavier than ever before from the valley to the coast; while eastward, Sequoia National Park is experiencing the biggest year in its history in numbers of visitors. The completion of the unpaved portions will increase this travel many, many times—and the day of that final completion, in the minds of

(Continued on page 28)



IS YOUR CAR A PAYING PROPOSITION?

A Few Tips to the Car Owner Who Is Paying for Motor Transportation Without Making It Pay Him

By R. C. FREDERICKS

Two men stood in the lobby of a theatre chatting about motor cars. One asked the other where he had parked the car, and the reply was: "I never drive down this way at night; it's too much bother. I take a taxi. Don't know but that it's cheaper in the long run."

"That makes your motoring come high," the inquirer said. "You pay for the use of a car and then don't use it. In other words, your transportation cost is nearly doubled, whereas an automobile ought to enable you to economize on this item."

The orchestra stopped playing and they returned to their seats without further discussion. But the next day chance threw them together in the smoker of a train headed west across the state.

"Don't you ever make this trip by motor?" asked the automobile enthusiast, explaining that he was forced to travel by rail on this particular occasion because another member of his family was using his car.

"Why should I?" the other replied. "It takes me three hours to motor up to the mill as against two hours by rail. Besides, when I travel by train I never have to worry about punctures and don't have to bother about looking around for a garage."

"You mean that traveling by rail is the better way," the motor enthusiast summarized the situation.

"I wouldn't exactly say that," the other explained. "I like to motor as well as anyone. I think it's a good sport and all that, but it's not as economical or as convenient as it's cracked up to be."

The man who had started the argument snuffed out his cigar and prepared to deliver an oration. A lot of what he had to say was decidedly interesting and valuable. I'll pass along the high spots.

Pass the Word Along

"Now that we're on this subject," he began, "I'm going to tell you a few things. I only wish that I were talking to all the car owners in the country instead of to just one, but I guess that if I convert you to my way of thinking you may become enthusiastic enough to pass the good word along."

"I don't know whether you've noticed it or not but it's a fact that half the automobiles registered are not used half enough. Expressed in a more forceful way this means that a very

large percentage of the nation's motor transportation is going to waste. We have heard a lot about the difficulties the railroads have in earning sufficient profits to meet their dividend requirements, but I'm here to state that if the car owners of America were operating their machines on a business basis, nine-tenths of them would be insolvent.

"American automobiles are not paying sufficient dividends because their owners do not use the cars enough. It is exactly as though the railroads decided not to put on extra cars to accommodate the summer vacationists because it would be too much bother. It is as though the street car companies wouldn't avail themselves of the opportunity to make a few extra dollars by putting on a few extra cars for special occasions. Thousands of motorists could save on transportation expenses if they would use their cars more consistently, but they still seem to be in the dark ages of motoring."

Inconveniences of Travel

"The great trouble is that most people are blind to the inconveniences of railroad and street car travel. You talk about making the mill in two hours but you forget to include the half hour you spend going to and waiting at the railroad station, and the time consumed in walking from the other station to your mill. When you say it takes you three hours by motor you forget that this covers the total time from your office in the city to the doorsteps of the mill. That is just one of the conveniences of motor transportation which you overlook."

"Do you realize what an inconvenience it is to buy tickets, to have your bags hauled here and there, to be eternally catering to the itching palms of porters, to frequently fail to obtain a Pullman seat and thus be compelled to share a seat in a day coach with anyone from a crying baby to a snoring section hand, to smother and freeze intermittently and to endure a ride in a dilapidated taxi, or stand in a crowded street car when you have returned to the city terminal? The sum total of these petty inconveniences constitutes a bore. Stopping at a filling station to buy gas or even changing a tire is a pleasure by comparison."

"I will concede that there are times when it is more economical and perhaps more logical to travel by rail, but such instances are rarer than you might suppose. If train accommodations are ex-

ceptionally good, and if but one person is to make a flying trip to some point and back again the same day, there is not so much advantage in using the car. This is particularly true if the weather happens to be unfavorable for motoring or if the highways are not in good condition. But if two persons are to travel, the motor car is to be preferred if there is a possible chance of using it to advantage, for it is an axiom of motoring that the cost of transportation does not increase in direct proportion to the increase in the number of passengers. It costs five times as much to transport five passengers by rail as it costs to transport one; but by motor the cost is only slightly more for five. There is just a little more wear and tear on the tires, a little more gas is consumed in propelling the extra weight and ferry charges will be slightly more. But all these are trivial in comparison to the cost of only one extra railroad fare."

"I have often seen motorists decide not to make a certain trip by motor because the tires might not hold out. They know that a blowout is about due and do not exactly fancy the idea of spending thirty or forty dollars for a new shoe. They imagine that they are saving this money by leaving the car in the garage and taking the train. But it is all false economy, for after they have returned home and driven around town for a few hundred miles the tire goes west and they have to buy a new one anyway."

Double Rates

"What really happens is this: they pay double transportation rates. Had they bought the new tire in the first place the actual cost of it during the trip would have been less than a half cent a mile (for cord tires give 10,000 to 15,000 miles of service easily) and they would have saved the entire cost of rail transportation, which for two people, including Pullman seats, taxis and tips, averages about ten cents a mile."

"Car owners forget that when they have invested in motor car transportation they keep right on paying for depreciation, insurance, storage and other fixed charges regardless of whether the machine stands idle in the garage or burns the road. The only logical course of action is to use the car every time it can be made to fill the need for transportation, whether it be a thousand-mile trip or a run downtown to

the office, the theatre or the hotel. When an automobile is used like this it begins to pay dividends to the owner in the form of savings in transportation expenses. He finds that it costs him less to own a car than not to own one. He begins to appreciate the fact that a motor car is a necessity, not necessarily a pleasure craft—though it can be that too at slightly extra cost.

"I can see that you are eager to remind me that I am talking like an automobile salesman. But just let me make my point a little clearer. When a man buys a car and decides to run it a year it costs him the delivered price plus the first year's depreciation, the license fee, the insurance premiums, the operating expenses and the repairs. Whatever it is worth at the end of the year, either in cash or as part payment for a new car, may be deducted from the total of the above items. The difference represents the cost of motor transportation for one year. Isn't it obvious that the only items which will increase through increased use of the car are the operating expenses, repairs and a little more depreciation?"

"Now figured out on this basis the cost of motor transportation seems excessive. But here's the point: if car owners would make such calculations and face the facts they would soon realize how utterly absurd and how

grossly extravagant it is for them to keep their cars in the garage and use trains, street cars and taxis.

"I see that you want to interrupt me again. Doubtless you want to tell me that if a car is used all the time it will wear out very quickly—in other words, that it will add greatly to the item of depreciation. But I am going to startle you by stating that the more a car is used the slower it depreciates. This is a broad statement, I will admit, but let me explain.

"There are cars in my garage which, though driven thirty or forty thousand miles, are in better condition than many which have only covered a mere five. Some of these very much used cars would bring just as good prices in the second-hand market as those which have been 'saved.' For example, one motorist has driven his car 10,000 miles in a year's time, while a neighbor has done but 4,000 in two years. Regardless of the condition of the latter's car, it is evident that he will be charged with two years' depreciation when he tries to dispose of it. He paid twice as much for storage, licensing and insurance as the other car owner, yet he got less than half as much use from it and must have spent a considerable amount of money for street car and train fares. The owner of the first car spent more for gas, oil, tires and repairs, but considering the service he received and the

savings which he realized on other forms of transportation his motoring is far more sensible and economical. Recall, too, that the man who uses his car constantly soon learns how to care for it properly. A day in the shop costs him more than a repair bill, so he sees to it that the machine receives the sort of treatment which insures it against breakdowns."

The other motorist assimilated these remarks and then turning to the financial page of the morning paper pointed to the list of stock quotations and said: "I must admit that you've got the right idea about this, though it has taken me a long while to see through it. I'm one of these chaps who see a point quicker when a convincing analogy is brought into the discussion. I think there are many car owners like me and I'd like to suggest an analogy which you ought to use whenever you are trying to impress upon a motorist the importance of these points."

"You're going to tell me that a car, like money, ought to be put to work in order to earn dividends," the enthusiast interrupted, taking the words right out of his friend's mouth.

"Exactly."

"How could it be otherwise? Your car is your money. Make it work for you. But, above all, don't let it rot in the garage."

DRIVING HINTS

MAKE it your practice at least once a month to remove the strainer in the gasoline line and clean out all foreign matter that has lodged there. In spite of the best care some dirt is constantly getting into the gasoline tank and it always stops at the strainer. This will eventually clog it, shutting off the gasoline and stopping the engine. As this is a troublesome occurrence it is best to avoid it by cleaning the strainer occasionally. There is one where the feed pipe enters the vacuum tank and sometimes another one where the gasoline enters the carburetor.

* * *

When going up a steep hill do not crowd the engine to see if you can possibly get to the top without shifting gears. When running very slowly (laboring) the sudden blows of the explosion acting against the resistance of the slow-moving crankshaft tend to flatten out the bearings, shortening their life, wearing them out, and making the engine knock long before it should under proper use. As it is an expensive matter to fit new bearings this is an important detail to attend to.

A relief cock with a handle that is up when the valve is closed is apt to work open if the plug loosens through wear or the spring breaks. The best remedy for such a trouble is to buy a new one with the hole set in the proper direction, so that it is closed when the handle is pointing downward. Another method is to fill the hole in the plug with a piece of brass carefully fitted and to drill a new hole in such a position that the handle will be pointing downward when the hole is closed.

* * *

This is road tar season. Motorists in all parts of the country are likely to encounter roads fresh with oil during the dry and dusty summer months. A road wet with oil is far more slippery and infinitely more treacherous than wet asphalt and should be negotiated with the greatest care. Another reason for driving slowly is found in the fact that the oil which spatters onto the car is extremely difficult to remove. The fenders are not sufficient protection.

If the car is driven at a rapid rate tiny particles of tarry road oil are thrown forward by the front wheels and caught by the body as the car moves ahead. Immediate washing will do much to eliminate these little

specks of tar from the body surface, but where this does not suffice it is worth remembering that there are some excellent tar-removing compounds on the market and your garage or accessory dealer should have one which he can honestly recommend.

The present method of oiling roads is not only extremely unsatisfactory from the motorist's standpoint, but it is extremely wasteful of oil. About ten per cent soaks into the road and the remaining ninety is picked up by tires and thus transferred to the fenders and other parts.

* * *

Be careful that the spare does not hide all or part of the rear license plate. Recently the police of some of the towns and cities have paid more attention to this matter, so it may save you a fine to adjust matters correctly in advance.

They are also becoming more particular about the rear plate being sufficiently lighted at night. This plate should be illuminated by a white light making it legible at fifty feet. If this is not done, the driver is subject not only to great delay but there is every possibility of a fine.

For the summer tour a practical motor coat like the one below is indispensable. This one is of tan camel's hair, and the hat is of tan felt trimmed with two quills. —Abercrombie & Fitch, N. Y.



A sport costume that is different is shown below. Of course there are knickers—but they are of white flannel, and the sweater coat is silk knit, cleverly fringed and striped in bright colors. —Bonwit-Teller Co., N. Y.

Pretty sweaters and plenty of variety is Fashion's edict for the summer outdoor girl, and above is a charming model to meet the most exacting taste. It is knitted of silvergloss, with two-color stripes running around. —Bonwit-Teller Co., N. Y.

MILADY MOTORIST

By EDITH M. GARFIELD

AS A RULE American women find Paris styles of the first water too extreme for practical purposes until they are modified to meet their more conservative taste. Of course stage-folk wear them—just as they are designed—for stage-folk find it necessary to create sensations, but for the average well-dressed American woman the idiosyncrasies of Parisian designers are a bit too startling.

Take, for instance, the latest whimsy among French modistes of combining a short coat of fur with the flimsiest sort of a lace skirt; a pretty paradox, perhaps, but not to be worn over here. And then there is the fad that started some weeks ago at the races, of wearing tremendous shade hats, but with the shade element entirely removed by making the brim of sheerest net. They called them parasol hats—but the effect was more of a halo. Another idea that was popular in Paris was the use of harem veils on hats, draped to cover the entire lower part of the face. Of course, the effect of a



pair of sparkling eyes peeping over this lacy fence would be charming, but the idea is not expected to take hold over here.

French modistes hold the creations of American designers in great contempt. They call them trite, and say that they lack the vital spark that makes the Paris gown the masterpiece it is. But in spite of all this, we manage to get along very nicely with our domestic products, and those of us who cannot afford imported clothes are quite content with what we can

get—whether they are native products, or modified copies of true Parisian creations.

Designers have used, in speedy succession, inspirations from the costumes of Spain, Russia, and now Hungary or Poland. The clinging shawls and high combs of Spanish influence rapidly gave way to the exotic embroidery and severe lines of the Russian, and this in turn has stepped aside to make room for the craze for Hungarian effects—until we pause for breath and gasp, what next?

In America, the demand for sport costumes is excessive, and the French interpretation of ancient Slavic styles has produced some very effective models. Sport clothes are worn in France with the formality that is typical of the race, while in America the modern women don them with the nonchalance bred of carefree outdoor life. Here we demand comfort above all else, in our sport clothes, while in France, original and bizarre effects are beloved, no matter what sacrifices of comfort are to be endured.

HOW THE ENGINE BREATHES

Like the Old Children's Game of "Marching to Jerusalem"

THE engine breathes a dry mixture of gasoline and air and exhales hot carbon dioxide and steam. At least that is the theoretically ideal state. Unfortunately modern gasoline vaporizes with such difficulty that much liquid fuel is drawn into the cylinders. Dust from the road is also sucked in and this is an impurity which settles on the surface of the combustion chamber and is an important constituent of "carbon" deposit. Some moisture is also carried along by the intruding air, which aids rather than hinders the progress of combustion and the development of power. The incoming mixture of gasoline and air should be perfectly homogeneous and perfectly proportioned.

There should be just the right amount of gasoline in each charge of air to secure correct combustion and furthermore the gasoline should not only exist as vapor, but this vapor should be distributed throughout the air with the greatest impartiality. A microscopic analysis of the mixture at any one pin point should be exactly the same as the analysis at any other pin point. There should not be an iota of difference between them.

When all these ideals are realized it is plain that when a good hot spark occurs that all the gasoline will be burned and that the products of combustion passing out of the exhaust will consist of carbon dioxide, water in the form of steam, and the inert gases, consisting of nitrogen mainly, although there are small quantities of neon, xenon, argon, krypton and helium.

Like an Old Game

What goes on in the cylinder during the intense instant that the explosion occurs is reminiscent of that game we used to play, called "Marching to Jerusalem," where chairs were ar-

ranged in a row. You will recall that the number of chairs was always one less than the number of children marching around them. When the music stopped there was a grand scramble to gain a seat and the child who was left without one was eliminated from the game. In a similar manner, when the spark occurs in the cylinder, there is a mad scramble among the tiny particles of gasoline vapor and of air to lock arms with each other and change themselves into carbon dioxide and steam. But if there happens to be too little air at any infinitesimal point there is likely to be a little carbon monoxide left over or even a few tiny particles of pure carbon. This condition holds true for the whole mass of burning charge. Furthermore, if there is even a very small drop of unvaporized gasoline anywhere in the mixture the air surrounding it only has time or opportunity at the moment of combustion to unite with a little of the fuel on its outer surface. In other words, the air just burns the outer skin.

The intense heat accompanying the explosion may vaporize this droplet, but it is then too late for it to burn or if it is not too late it is likely that all the available air has been used up. In spite of the intense heat not all of the droplets are vaporized and some of them collect on the walls of the cylinder and make their way down into the crankcase, where they thin the lubricating oil to such a point that it loses its effectiveness and must be changed.

It is plain that the carburetor has a difficult task to perform in supplying the engine with a reasonably dry, uniform mixture of gasoline and air. The carburetor must scientifically proportion the air and gasoline for all throttle openings and must mix the fuel and air thoroughly. The first is accomplished by various arrangements of jet and air valves or both. And the second result is achieved by virtue of the fact

that the gasoline which is sucked from the jets is caught up by a swirl of air which quickly distributes the fuel throughout the mass. It only remains to vaporize any particles of fuel which are still in a liquid state. This is done most effectively, perhaps, by heating the intake manifold so hot that these little particles are quickly converted. On 1922 cars there is usually adequate provision for heating the mixture, but on cars of previous years the heating arrangements are not wholly sufficient.

Heating Devices

The amount of heat supplied has been increased year by year so that the 1921 car is only slightly inferior to the average car of 1922, although some 1921 cars are notably defective, and there are some cars of the current season that also might be improved. The farther we go back, the poorer we find the provisions for heating, and as a consequence the running of most of the older models as well as a few of the modern ones may be greatly improved both as regards power and economy by increasing the heat supplied to the mixture. Various heating devices may be purchased for application to various cars, and where these do not fully meet specific requirements a competent repairman should be able to devise a mechanism which will.

The faster the engine breathes and the freer it breathes, the more power it produces. Its iron lungs draw in the mixture in quick, even gulps. Each cylinder pulls in a charge every two revolutions. Nothing should hamper its breathing when full power is desired. The intake passages should be large and clear, and so should the exhaust. When less than full power is demanded the breathing of the engine is literally "throttled" or strangled. The closing of the throttle makes the engine breathing more difficult and reduces the amount of charge per cylinder.

(Continued on page 24)

MOTORING WITH ASSURANCE

A Carefully Equipped Tool Box Insures Successful Touring

By HAROLD F. BLANCHARD

MOTORING with assurance implies a carefully equipped tool box. It is impossible to get the full pleasure out of the car if you are worried about using an antiquated jack or a defective tire pump, whenever tire trouble develops. Or if some little thing goes wrong with the engine, it is comforting to know that the wrenches you have will reach every nut.

The cost of fitting out the tool box properly is not great; ordinarily it will amount to only a few dollars, but you will find that it will be money spent to the very best advantage. Nor is it necessary for the motor-car owner to be an experienced automobile mechanic in order to use his tools effectively. A large number of road troubles are obvious ones and their fixing merely demands the right tool. This statement even applies to the ignition system, where it will be found that a large percentage of electrical defects are caused either by loose wires or by defective insulation. Sharp eyes will locate these troubles in most cases, and the fact that the eyes may belong to amateur or expert really makes little difference—that is, in most cases. Loose wires may readily be tightened if the right tools are at hand, and defective insulation may be taped providing there is tape in the tool box.

In changing a tire, the lack of pliers may cause considerable delay in loosening the round nut which screws down over the valve stem to hold it tightly against the felloe of the wheel. When a cylinder is missing it is essential to have a wrench large enough to fit the the plug. Otherwise the removal of the plug is almost an impossible proceeding, although it can be accomplished with patient use of a hammer and cold chisel.

Changing Tires

The average motorist is more interested in being able to change tires with the greatest ease than he is in having small difficulty in any other roadside job. If he possesses a good socket wrench, removing the nuts, lifting the tire off, putting the new tire in place and screwing up the nuts is likely to be the easiest part of the job. On many cars the most troublesome job is putting the jack in place and jacking the wheel up. If the jack is cheap and badly designed, it is quite possible to spend five minutes in jacking up a rear wheel and, in addition, blister one hand, skin the knuckles on the other, ruin a suit of clothes and tire oneself out completely. On the other hand, if the jack is well designed and

well built, it probably has a four-foot handle and may be raised or lowered by pulling the handle in or out. The handle is long enough to permit the jack to be slipped under the rear axle without soiling one's clothes by rubbing shoulders with the springs. And once the jack is in place it only requires a half dozen moves of a very easy-acting handle to raise the car. It is easily possible to jack up the wheel in less than a minute, where a cheaper and less efficient jack would require five or even ten minutes. A good jack of the type described may be purchased for from \$4 to \$6, and in the hands of the ordinary motorist it will last a lifetime. It need not be traded in or sold with the car but may be kept year after year. When you dispose of your automobile there is no reason why you should let the jack and other special tools go with it. They should be kept. It is sufficient to sell the car with the tools it had when you got it. The only exception to this rule is in a case where the extra tool equipment may aid in disposing of the machine. It is rarely the fact, however, that these details will influence the sale one way or the other.

A Good Pump

Next to a good jack an efficient hand tire pump is the most essential equipment. At least half the pumps in use make pumping up a tire on the road the worst sort of drudgery. This is a mistake. If the hand pump is well made and in good working order, pumping up a tire on the road should not be regarded as particularly hard work. There are many times when a good pump is a very useful article. If the car is kept in a private garage, every once in so often a flat tire will be found. Perhaps its flatness is due to a leaky valve, in which case it need not be changed. Whatever the cause, unless a puncture is discovered, it is good policy to pump the tire up and await further developments. This course demands a good hand pump or, better yet, a spark-plug or power-driven pump.

On the road a slow leak will occasionally be discovered in a tire. Usually it is quicker and far more satisfactory to pump the tire up and keep going than it is to stop and change it. Then, too, the best of motorists will occasionally have two or three punctures or blowouts in one day, using up one or two spares as the case may be. If a puncture occurs after the spare or spares are used up, the tire must be dismounted and another tube

put in place. Inflating this tire demands an efficient pump if a certain amount of physical torture is to be avoided.

Another reason for having a good pump is that the air leaks out of spares just about as fast as it does out of the tires in use. The spares should be tested and inflated whenever this operation is performed on the tires on the car. If they are overlooked, the spare is quite likely to be soft when it is needed.

Tire-Mounting Tools

Inasmuch as tires must occasionally be removed from the rim on the road, a rim tool and tire-mounting tools should be part of the equipment. Tubes should always be dusted with soapstone before being inserted in the casing and, therefore, a can of soapstone should be included in the tool box. Extra valve insides, dust caps and valve caps should be kept in a small tin box together with other small parts that are likely to become lost if kept loose in the tool compartment. Other parts which should be kept in this box include spark plugs, wrench for adjusting the breaker points, cotter pins, lock washers, spark plug and other wire terminal nuts and fuses.

In addition to whatever spare tires are carried, there should be a spare tube so that there will always be one available for an emergency. For example, a motorist recently had a blow-out and puncture within the short distance of a mile. He had only one spare and no spare tube. He had provided a tube-repair kit for just such an emergency, but the valve of the punctured tire had been sheared off simply because the retaining nut which screws down tight against the felloe was not in place. He had to drive five miles on the rim before he found a garage where a tube could be purchased.

The Repair Kit

A tube-repair kit is also essential. It is not likely that a careful motorist will use such a kit once in five years, but it is worth its weight in gold when the emergency demanding it arises.

Every car should have a pair of chains for at least the rear wheels; and if the going is particularly bad, chains for the front wheels will also be required. On a very muddy road, particularly if it has a high crown, it is impossible to steer with any degree of certainty unless the front wheels have chains, and it is quite easy to slide off of the road into the ditch without

them. Rope three-quarters to one inch in diameter is an excellent substitute in an emergency. It is wound around the tires and between the spokes. Such rope may be bought from any farmer unless perhaps during haying and harvesting, since he uses it to operate his hayfork and grain slings.

For the general run of repairs about the car it is advisable to have the following articles in addition to those already mentioned:

1. Large and small adjustable wrenches, preferably of the S type handle rather than straight-handle or bicycle type.
2. Screw drivers, large, medium, small size.
3. End wrenches to fit most of the nuts on the car from the smallest up to spark-plug size.
4. A wrench which will actually remove the spark-plugs you have. Spark-plugs are not always of the same size, and not all spark-plug wrenches will serve your particular engine.
5. Pair of patent adjustable pliers, commonly described as automobile pliers.
6. Wire-cutting pliers.
7. Medium-weight hammer.
8. Cold chisel with $\frac{3}{8}$ -inch edge.
9. Socket wrenches for any nuts which you cannot reach with the wrenches previously specified.
10. Box cotter pins, assorted.
11. Spare fan belt.
12. Pound-can of medium grease.
13. Roll of friction tape.
14. Iron wire.
15. Three or four yards of high-tension

cable. This may be used also for lighting wiring and for testing.

16. Tire gauge.
17. Pocket flash lamp.

The last item is most important. Driving at night is robbed of most of its terrors if a flash lamp is carried. With it no time is lost in finding the right tools to change a tire, or to locate nuts or other parts which have dropped on the road. It may be used for examining gasoline and oil levels, for reading road maps, for examining road signs if the car is not equipped with a spot light, and, of course, it is indispensable when engine trouble develops. Fancy finding a short circuit at night without a lamp! The lamp, by the way, should be given very careful attention. The filament in its bulb is very delicate and it should never be dropped. Never place it on a seat while the car is in motion or on the running board when the car is stopped. If it rolls off, the filament is likely to be broken and the light rendered useless until a new bulb can be purchased. When not in the hands or in the pocket, the only safe place for it is in one of the door pockets.

Reserves of Gas

If the car is to be used for cross-country touring where garages are few and far between and road conditions

uncertain, a set of cans for reserve supplies of gasoline, water and oil should be purchased. An extra gallon of gasoline is a good thing to have along at all times and especially if the gasoline tank has no reserve chamber. Regardless of how far out in the country you are, one gallon will usually bring you to a garage, although it may require a little judicious driving to perform this feat if the distance is somewhat greater than the car's usual ability per gallon.

A few spare nuts and bolts of assorted sizes may also be put to good use.

Stovepipe Wire

The iron wire mentioned in the list should be ordinary stovepipe wire. It will have a variety of uses. It may be employed for patching up a broken gasoline pipe or applying splints to a broken spring.

Last but far from least in the list should be a pair of overalls. If they are large enough they may be donned and doffed with the greatest readiness, and they should be worn whenever work is being done on the car. They are just as necessary when changing a tire or filling the grease cups as at any other time. An old linen duster or an old raincoat also affords excellent protection against grease and grime.

HOW THE ENGINE BREATHES

(Continued from page 22)

When the throttle is nearly closed each cylinder is able to gulp down just enough mixture to keep the engine turning over at its slowest speed.

Each cylinder produces power only one stroke in four. The other three strokes are spent in preparation for the fourth stroke. The first stroke of preparation is the downward or suction stroke of the piston. During this stroke the intake valve is open and the exhaust valve is closed. On the second stroke of preparation the piston moves upward and compresses the charge until it occupies a compact mass at the top. The valves are closed during compression. Preparations are now complete. The psychological moment has arrived. It only remains for the spark to touch it off and this happens a trifle before the piston reaches top dead center on the compression stroke. The next stroke is the power stroke. The valves, of course, are still closed. Almost the instant the spark appears the charge becomes a white hot inferno where the temperature may rise to two or three thousand degrees Fahrenheit and the pressure may suddenly jump from 60 to 200 pounds because of this

rise. It is this increase in pressure that supplies the power. This force acting against the piston forces it downward. As the piston moves down the pressure falls. By the time the piston reaches the bottom the pressure in the cylinder may not be more than five or ten pounds, due partly to expansion but also to loss of pressure caused by loss of temperature to the cylinder walls and piston head. If the valves or piston rings leak they may account for a considerable pressure loss, and even though the rings are in perfect condition a little pressure will leak by them.

The Exhaust Stroke

The last stroke, or exhaust stroke, is made with the exhaust valve open and the intake valve closed. It is also a stroke of preparation. In fact, it would not be illogical to call it the first stroke of preparation, making the intake stroke the second and the compression stroke the third stroke of preparation.

The business man will prefer to look upon this cycle of events as a "deal." The power stroke represents a

sale to a customer. The pressure maximum attained on this stroke is the price obtained and this price must keep the business going until the next deal is consummated. This price must be a trifle larger than the (power) "cost" of the other three strokes. If not, the "business" will "fail" and the engine will stall. If the "price" is considerably in excess of the "cost" the difference is "clear profit" or available power for driving the car.

The explosion pressure is a maximum only when the throttle is wide open. As the throttle is closed the ability of the engine to breathe is proportionately reduced and the power output or "profit" is correspondingly restricted. The compression pressure is also only a maximum at full throttle. When the engine is running on a nearly closed throttle the pressure developed by the explosion stroke is only a little more than sufficient to pay for the other three strokes.

The functioning of an engine is really a nice example of business economy. It isn't the explosion pressure alone that determines the power

(Continued on page 28)

WHAT NOT TO DO WHEN WORKING ON YOUR CAR

When You Tinker, Do So Sparingly and Also Intelligently

By I. M. GILBERTSON

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IN THAT special time you set aside for the purpose of keeping the car in good running condition it is just as important to be prepared with a knowledge of what not to do as it is to know what to do. Give some people a monkey wrench and a screw driver, and the damage they will do to a car will very often more than offset any actual repair they make.

For example, there are the clamps which hold the storage battery in place. Once while refilling the battery of my car I noticed that these support clamps could be further tightened. So, thinking I had done something to prolong the life of the battery, I got busy with the pliers. Then I replaced the floor boards and went my way.

A week later I noticed that the wooden case was badly cracked directly beneath the clamp which I had tightened most. A few more days of hard riding and the cell nearest the broken side of the box would also have broken, thus allowing the battery solution to leak out. The battery was only saved from the junk heap by putting the cells in a new case. All of which was a lesson that as long as the battery clamps hold the battery tight enough to keep it from coming loose they are just right. In nine cases out of ten the battery clamps are something not to tighten.

Valve Adjusting

In the course of time all drivers are tempted to apply the wrenches to the valve adjusting and lock nuts. It is unfortunate that valve adjusting is such tedious and accurate work, because if there is one thing all motors need it is constant checking up of the valve clearances. About one motor out of a hundred is free from valve tapping.

Even when cars come from the shop, apparently A-1 in every respect mechanically, invariably one of the valves will be just loose enough to produce an audible click or tap. When, as in the case of the twelve-cylinder engine, there are twenty-four valves to adjust, all of which must be tight enough so as not to produce tapping and yet with enough clearance to permit perfect closing of each and every valve, it is nearly impossible to adjust every one

of them with the exact desired clearance.

Most drivers, finding a valve loose, adjust the push rod so that there isn't any clearance between the valve stem and the rod. This makes the motor run quietly, but it will lack quick acceleration. The car will fail to take ordinary hills on "high." If, however, the clearance has been removed entirely there is a likelihood that the valve will be slightly open when it is supposed to be shut. This will cause the respective cylinder to "miss"—and the motor will lose power and run unevenly. If the valve which is too tightly adjusted happens to be an intake valve there will be backfiring into the carburetor.

Push-Rod Adjustments

It is better not to touch the valves unless one of them develops an audible tapping, which is the same as saying that if the push rod for the particular valve shows a clearance greater than the thickness of a visiting card when the valve is closed, then the push rod needs to be lengthened. This is done by means of an adjusting nut and a lock nut; the latter must be turned off before the adjustment can be made and should be turned on afterwards so as to maintain the adjustment.

In these days of low-grade fuel many drivers are tempted to blame the carburetor for things for which it isn't at all responsible. One driver I know took his carburetor apart simply because he thought it was leaking gasoline. Whenever the car had been standing he found fuel in the pan below the motor.

But all his work revealed nothing excepting that the carburetor was in no way to blame for the trouble. He should not have tampered with the gas line, for later he was informed at the service station that the fuel he found in the pan was simply kerosene which condenses in the intake manifold and runs back into the carburetor mixing chamber and thence out into the pan when the engine cools. It is entirely due to the low grade of gasoline used nowadays.

A very common source of unnecessary trouble results from being too eager to keep the rim lugs extra tight.

Car owners are told that unless the lugs are kept tight at all times annoying rim squeaks will develop. Frequent exercise with the lug wrench seems to be a simple way of forestalling such trouble and, so, many a car owner immediately proceeds to jump into the fire believing that he has been in the frying pan. The leverage one gets with a lug wrench, or any socket wrench for that matter, is so great that one turn too many will shear off a lug or a nut in no time.

Too Much Grease

Too much advice about keeping the car well greased and oiled frequently leads the newcomer into a lot of otherwise unnecessary trouble. Many a driver has oiled his generator and starter motor too liberally with the result that the commutators became oil-soaked and went temporarily out of business. It isn't a half-bad idea to consult the instruction book now and again. If the oiling charts stipulate "six drops of oil every 1,000 miles" nothing will be gained by increasing the dose to twelve drops.

Possibly no part of the car suffers more from excessive attention than the fan belt. Because the fan adjustment is invariably simple and the parts accessible, the owner with a passion for tinkering with the car when there is nothing wrong with it keeps tightening the belt every week or so until it becomes a source of trouble and winds up by breaking. All the while he imagines that the adjustment does not remain constant, whereas the trouble is that every time he stretches the belt by tightening it he encourages it to stretch more. A belt should be tightened only when it is necessary and then only just enough so that the fan does not spin around free. A belt only needs to exert a light friction on the fan pulley to keep it spinning.

There are always a number of nuts and studs on a motor car which can stand a bit of tightening; and attention to these will tend to prolong the life of the mechanism. But unless one goes at the work intelligently—and sparingly—it is better to leave the tools in the kit. Enough things go wrong with a car without manufacturing them.



OFF THE BEATEN TRAIL

(Continued from page 14)

of night find the car, and one may be as comfortable on the open road as in the best of hotels. There is nothing more healthful than sleeping in the open, and you can do this anywhere in California during the summer season.

Yuba Pass Route

Another route which has not as yet received its just share of popularity is the Yuba Pass. Traversing as it does one of the most storied of the lanes of travel as well as one of the most scenic, it is odd that it has not proved one of the most popular of all those highways that lead to the magnificent vistas of the high Sierras.*

Its condition in past years has been against it as a line of motor travel, yet it is the first route over the Sierras open in the springtime and its value was recognized by the Argonauts in their march into California in the fifties.

On the famous yet unpress-agented Yuba Pass route lie the sites of many of the mining towns woven into the romances of Bret Harte. If you would imbibe the real spirit of the great realist of California and view the active setting of the tale of "The Millionaire of Rough and Ready," you have but to follow the Yuba Pass route to the old town of Rough and Ready, which is in much the same shape as it was in the days of Bret Harte and Mark Twain, when its barrooms echoed to the ribald popular melodies of the camps and when its affairs of barter and trade were managed with scales and gold dust.

Auto Camps

At Grass Valley you will find one of the finest automobile camps in the state. A charge of fifty cents a night keeps up the camp, which is provided with a concrete swimming pool, tennis courts, children's playground, baseball field and shelter houses and showers for campers. Another automobile camp is there at Nevada City, a few miles farther on, and the whole Sierra district is dotted not only with municipal camps but with camps provided by the Forest Service as well. It is a route that threads a camper's paradise, a wonderful place for a hunter and an ideal location for the disciple of Walton and Cotton.

At Grass Valley is one of the deepest and richest mines in the world, a mine which has been worked day and night seven days a week since the seventies and which has produced its two million dollars in precious metal every year.



A scene on the highway to Tahoe by way of the Yuba Pass

Near here the first gold quartz was discovered and this district is the real mother of the whole gold quartz industry.

A few miles away lies the canyon of the Bear River, which has been harnessed at Auburn and which provides much of the light and power of Northern California. Its river bed resembles that of the Merced in the beauty of its coloring and in the picturesque shapes of its torrent-hewn rocks. It is a great stream for fish, and the innumerable pools lend ample opportunity for all the anglers who come.

Week-End Trips

Then, if you long for a trip off the beaten trail that requires, not the extent of a vacation of length, but only the joys of a week-end or a day's picnicking excursion, there are many short trips down the peninsula and across the bay and over on the Marin shore.

The trip over Kings Mountain and down Tunitas Creek has never received the amount of traffic its beauties warrant and it permits a continuation to Half Moon Bay over very good mountain roads or on down to La Honda and San Gregorio through the great redwood groves of the Santa Cruz district.

Over in Alameda and Contra Costa counties there are many short trips

attractive in scenery and in historic interest. The Franklin Canyon route from Martinez, all paved concrete highway now, is one of these. The extension of the Skyline Boulevard in Oakland is one of the trips off the beaten trail, and another route goes through the old town of Moraga past one of the oldest homes in Contra Costa county.

On the Marin Side

Then, over on the Marin side, Lagunitas awaits and an excursion to Inverness and Bodega Bay. A short Sunday's outing is to be found on the government reservation south of the town of Sausalito and the few cars that make the trip mark it as an excursion off the beaten trail.

Then there are scores of trips that the touring bureau of the automobile club can put you in touch with where the traffic is light and there is much if not more to be seen than on the more heavily traveled highways of the state. It is something different, this touring off the beaten trail, and, in this day of improved camping equipments where the halt after the day's drive may be made wherever the beauty of scenery attracts, the lesser-traveled routes will get more and more of their share of the motor traffic from year to year.



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THE SIERRA-TO-THE-SEA HIGHWAY

(Continued from page 18)

those who have worked and planned and striven for it so long, is not far distant.

Charles A. Whitmore of Visalia, State Highway Commissioner, in his dedicatory address at Hanford, July 4, said, in part:

"Some of the spirit of determination and high purpose which inspired our forefathers when they established this nation is reflected in the spirit with which the full-blooded American citizens of this section planned and engineered the construction of this Sierra-to-the-Sea highway upon which we have made such a successful start. Eight years ago a little group of public-spirited men, realizing the need for a highway connecting this part of the San Joaquin Valley with the coast and mountain resorts, conceived the idea of getting state aid for its construction. After many months of effort a lateral from Hanford to San Lucas, on the coast highway, was incorporated in the 1915 bond issue as a co-operative highway, in the construction of which the state was to pay one-half and the counties which it traversed the other half. But the construction cost was found so great that the counties in interest were unable to offer the degree of financial assistance requested, and no construction was possible.

Origin of the Highway

"But the backers of the highway were undaunted by the vicissitudes they encountered. When the 1919 bond issue was being framed they were among those present and the Hanford-Coalinga-San Lucas lateral was included for entire state construction. They also backed the demand of Visalia for provision for an eastward extension to the Sequoia National Park line. Thus the "Sierra-to-the-Sea" highway came into existence.

"There is no disguising the splendid conception back of this highway, nor its great importance to the future development of this section of the state. It provides a modern highway from this great, broad, rich valley to either mountain or coast resorts. Through its use residents of the valley can in a few hours be among the rugged peaks of the Sierras, under the deep shade of the greatest of living trees, or on the sands and in the cool, refreshing waters of the Pacific.

"The importance of the eastward extension of this highway was brought home to me the other day when a committee of business men from Santa Cruz appeared before the California Highway Commission pleading for the routing of the Skyline Boulevard out of San Francisco through the big trees of the California Redwood Park near

Santa Cruz. One speaker, a well-known California hotel man, said that to his knowledge the one outstanding thing that visitors to California wanted to see was our big trees. And one of the foreign representatives brought out the fact that pictures and descriptions of the California big trees are in European geographies, and for him, at least, constituted the one particular physical wonder that since boyhood he had nursed an ambition to contemplate.

"With the patriarchs of Giant Forest, to which all other giant trees in California yield the palm, made easily accessible by paved highways, who will venture to prophesy the number of visitors that will travel the Sierra-to-the-Sea highway? Who will venture to say what development may follow the completion of a first-class highway into these mountains of ours? Here is one place where we are safe in letting our imagination run riot—we are not liable to overestimate the ultimate.

"The ceremonies today mark the completion of a most important section of the Sierra-to-the-Sea lateral, from Lemoore to Coalinga, and we now have under construction the entire line from Giant Forest in Sequoia National Park to San Lucas on the coast line, with the exception of about forty miles west from Coalinga."

HOW THE ENGINE BREATHES

(Continued from page 24)

any more than in business will the selling price alone assure a profit. It's the difference between selling price and cost of doing business that counts. Keep the cost down and the profit is large, while high cost means small profit. Likewise, full value is obtained from a high explosion pressure only when the losses and leaks on the other three business strokes are minimized. Not only must the piston rings be as leak-proof as possible but the friction of the piston against the wall must not be any higher than good, cleaning lubricating oil permits. The valves, too, must be tight. They must open at the right moment and close at the correct instant. The engine must be a

smoothly running business organization. Valve springs must be strong enough to force the valve tappets to follow the cams.

The Psychological Moment

Furthermore, the deal must be consummated at the psychological moment. That means that the spark must occur at just the right instant. If the spark occurs too late or too early there is likely to be loss of power and other troubles.

Carbon in the cylinder interferes with these deals. Carbon causes pre-ignition and loss of power. It is as much out of place in an engine as dirt in a store. It cuts down the

profit and should be eliminated as soon as it becomes noticeable.

A mixture which is badly proportioned or contains particles of unvaporized fuel is like a business which has bought a line of inferior goods and expects to make a profit on them. In order to sell the stuff it is necessary to reduce the price; the profit per unit is smaller; and therefore a greater number of units must be handled in order to obtain the same total profit. Similarly, in the engine, if the mixture is not perfect, more of it must be used in order to develop the same power; in other words, the fuel consumption will be greater than it would be if conditions were perfect.



1

The actual bump in the road—just one bump to take.

2

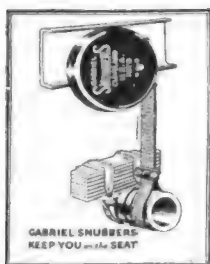
This shows the line of the car that is *not* Snubber-equipped. Note the number of unnecessary bumps or rebounds caused by one bump.

3

Here is the way a Snubber-equipped car takes a bump. The springs soften the first shock—the Snubbers eliminate the rebound. Why let your car put more bumps in the road than actually exist?



How Many Bumps in One Bump?

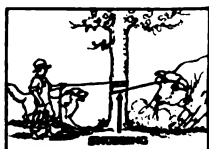


A CAR that is *not* equipped with Gabriel Snubbers gets a good many more bumps per bump than it should. There's the *actual* bump—then there comes the succession of rebounds—the continued bouncing after the actual bump is past. It's annoying—it's tiring—it's injurious to the car.

Put on Gabriel Snubbers and you'll stop this unnecessary discomfort. With Gabriel Snubbers you ride on *the seat*—no unnecessary rebounds—no hitting your head on the top. Here's why—

When the wheels hit a bump, the natural flexibility of the springs allows them to compress and soften the shock. Then instead of a terrific up-throw, Snubbers control the spring expansion and let the compressed springs back to normal position slowly and gently—without throwing you from the seat or without strain on your car.

Gabriel Snubbers are sold in sets of four—two front and two rear. Any dealer who does not make from \$40 to \$50 a set selling high priced shock absorbers will tell you that Gabriel Snubbers give the best results regardless of price.



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THE BUSINESS WEATHERVANE*

The Value of Quick Stock Turnovers

By G. W. HAFNER

THE interest of every business man is, naturally, to make his capital do as much work for him as possible. That means letting a given dollar rest in a given lot of material for as short a time as possible. And doing this means moving stock as rapidly as possible. And the one word that covers all this is "turnover."

It is never possible to make money on dollars that are tied up in commodities that will not move. And when prices are falling, it is easy to *lose* a great deal of money by holding onto merchandise or materials that move slowly, while the price for which they can be sold becomes constantly less and less. Because of this, every manufacturer and merchant ought to have information on the movement of goods in and out. It is this movement in and out, not only of the merchandise itself, but also of that which the merchandise represents—money—to which the term "turnover" has been applied.

In any business there are two things that are disposed of, replaced, and disposed of again; or in other words "turned over." These are

1. The stock of merchandise.
2. The money invested in such merchandise.

And the turnover of these items has a very definite effect upon the profits which the business makes during a given period. Hence an analysis of this effect is necessary in order to plan properly and conduct the business so as to:

1. Secure the maximum profit with a given capital, or
2. Secure a given profit with a minimum capital.

Quick Versus Slow Turnover

Perhaps the easiest way to state the case for a rapid rate of turnover in business is as follows:

A certain business, we will say, has annual sales of \$50,000 and makes a gross profit of \$17,500 (or 35 per cent of the sales). If we take off \$12,500 for expenses (25 per cent of the sales), the net profit would be \$5,000 (or 10 per cent of the sales). But if the annual sales of that business are increased to \$100,000 and a gross profit of 35 per cent is still realized, the amount of gross profit would be \$35,000. Suppose expenses of the business are doubled because of this increased business—a very liberal margin—there would then be \$25,000 in expenses to deduct from the gross profit of \$35,000, leaving a net profit of \$10,000.

Now it is at once evident that, having increased the sales to such an extent, the same percentage of profit is not required. The tendency in any business should be to *increase* the turnover and thereby *decrease* the percentage of profit. Under these circumstances the nation as a whole would benefit, and the individual engaged in the business would certainly not suffer.

Another illustration: Two men are engaged in building construction. John Smith, the first contractor, finishes twelve jobs a year, making \$1,000 net profit on each job. He earns a total of \$12,000. Jim Jones, the second contractor, finishes eighteen jobs a year, making \$750 on each job. He earns a total of \$13,500. Moreover, he gets business away from Smith because his price is more attractive. When there are none too many jobs to go around at best this last consideration is of great importance.

Making Your Dollar Active

If a dollar earns ten profits for its owner in a year, the owner can afford to take a smaller profit *each time* than on another dollar which earns him, say, only five profits during the same length of time. And yet the dollar which returns the smaller *rate* of profit will bring in the larger *volume* of profit, simply because it is so much more active.

Now, this is precisely the point that most business men seem not to understand. They do not seem to be able to grasp the fundamental principle that even though the percentage of profit on merchandise or service be but, say, 5 per cent, if it is earned often enough, say, ten times in a year, the annual turnover on money or rate of profit on investment will be 50 per cent.

Too many merchants overlook the fact that their cost of doing business of, say, 25 per cent, cannot correctly be used to demand a 15 per cent margin of profit on each and every kind of merchandise sold, because it is the percentage of profit on one sale and not on the year's investment. A larger margin of profit needs to be added to the slow moving materials and a smaller margin to the quick moving.

The vital point of comparison is how much profit can you make a dollar earn selling a given article. Any business man can get rich earning a 5 per cent margin of profit on one certain commodity, if he sells it often enough; on the other hand, he may go bankrupt on merchandise offering 100 per cent

profit, if he rarely makes a sale. Quantity selling is the greatest modern profit policy. The profit on any one article or commodity is not much, but when this profit is multiplied by 1,000 or 5,000 or 10,000 the profit on the *volume* becomes considerable.

Lazy dollars, unnecessarily high profits, and sluggish business, all tend to go together. The business man who makes money in spite of conditions—and there are many such—are those who go out aggressively to make their dollars *active*.

How to Find Turnover Rate

The rate of turnover for a given time depends on just two things:

1. The average amount of money invested in the merchandise
2. The sales of the merchandise in the period.

Both amounts must be stated in the same terms in order to get a correct result. That is, the average amount invested must both be figured at the cost price, or at the selling price. It does not matter much which way they are figured, so far as the accuracy of the result goes; but it does make a decided difference if one of the elements is figured at one price, and the other at the other price. The result in that case is a figure that means precisely nothing.

It is obvious, then, that, since these two elements only are involved, the problem of increasing the rate of turnover depends on these two and no others. Hence one or both of two things must be done:

1. The average amount of money invested in merchandise must be decreased, relative to the volume of sales; or

2. The sales must be increased, in a greater ratio than the increase in the merchandise investment.

The rate of turnover may be found by dividing the yearly net sales by the *equivalent* merchandise investment.

By "equivalent merchandise investment" is meant a constant *yearly* investment in merchandise which is equivalent to the actual merchandise investment over a period of one year.

This means that the "equivalent merchandise investment" must be expressed in terms of *time* as well as of money. The fundamental unit in which equivalent investment is expressed is the dollar-year. It may also be expressed in some related unit which is reducible to dollar-years, such as dollar-months or dollar-weeks.

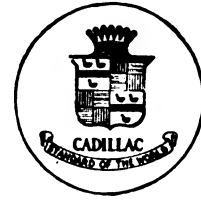
HEADLIGHT LENS



Made by
BAUSCH & LOMB OPTICAL CO.

- 1 It is scientifically and optically constructed, and consequently, of the highest efficiency.
- 2 It is made by Bausch & Lomb Optical Co., for nearly seventy years the leading lens makers of America.
- 3 It is factory equipment for Cadillac cars, and for other cars of the highest grade.
- 4 It is a lens positively without glare, but gives a powerful light.
- 5 It directs the light where it ought to go, and directing light is an optical process.
- 6 It gives a solid band of light the full width of the road, without streaks or dark places.
- 7 Safety has become one of the most fundamental factors of automobile driving—safety for yourself and the man coming towards you.
- 8 The traffic laws are going to be enforced more rigidly and your lights and headlight lenses must hereafter bear close official inspection.
- 9 Therefore, you need the Bausch & Lomb automobile headlight lens.

BAUSCH & LOMB OPTICAL CO.
OF CALIFORNIA
154 SUTTER STREET
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The more closely you study your own thoughts about the Cadillac, and analyze its wonderful hold on public approval, the more clearly you will see that when people call the Cadillac the greatest car in the world, they actually mean that it is the most trustworthy, the most constant, and the most dependable car in the world.

DON LEE

VAN NESS AVENUE AT O'FARRELL STREET
Tel. Prospect 100

In explanation of this, one dollar invested for one year is a dollar-year. Two dollars invested for six months, or three dollars invested for four months, or fifty cents for two years are all exact equivalents of a dollar-year.

Thus, if you invest \$500 in a certain article or commodity twice a year, you have an equivalent investment in that particular article of \$250. Suppose your sales of this article for the year to be \$1,000. By dividing the equivalent investment of \$250 into your sales of \$1,000, you find that your rate of turnover is four. If you invest \$500 in a given article every three months you have an equivalent investment of \$125. If your sales of that article for the year amount to \$2,000 your rate of turnover is sixteen.

Turnover and Profit

A business man pays a certain amount for the goods he sells, and he sells them for a certain other amount usually greater than the first. It is the difference between these that determines the success or failure of a busi-

ness. The merchandise itself is only a means to an end.

For certain reasons a merchant may want to invest as little money as possible in stock. The turnover of this investment, then, becomes of great importance for he must get his original investment back before he can invest it again. This turnover is dependent largely upon the movement of the goods, but the unit profit and the extension of credit also play an important part. An analysis of the turnover will largely determine the advisability of extending more or less credit and the amount of unit profit necessary with the given investment and the probable sales.

A knowledge of stock turnover by lines enables the business man to segregate the fast moving lines from those that move slowly. It indicates the commodities for which there is a ready demand, and those for which a demand must be created. This shows him where to concentrate his advertising and sales effort. It enables him to apply different sales methods particularly adapted to the conditions. He can perhaps increase the percentage of

profit on the slow moving lines to compensate for the slowness of movement, or possibly by decreasing his margin of profit the movement can be speeded up. His buying can be scheduled, so that his stock is always kept at the minimum.

In the final analysis, it must be remembered that turnover is not an end in and of itself, but merely a means to an end, namely, yearly net profits. The banker can pay his overhead expenses and declare dividends only by daily turnover of cash on hand. The same problem confronts any business man. His stock must turn a given number of times a year in order to yield a profit.

To exemplify further the close relation between turnover and profit, it is necessary only to refer to the ordinary vegetable and fruit market. The proprietor of such a market must turn his stocks daily, or they become unsalable. His stocks must sell and sell quickly, for therein lay his profits. Adopt the fruit vendor's methods, make them applicable to your business, and then watch the result.

*Copyright, 1922, by G. W. Hafner.

HELPFUL HINTS FOR THE MOTORIST

MUCH tire trouble may be avoided by knowing just when and how to "pull the ropes." Many roadside delays are caused by giving the tire man specific directions regarding tire mending. A single example will illustrate the matter very clearly.

A tire which had run about 2,000 miles was punctured by a sharp stone. The stone was a small one and the owner felt that just a small patch on the inside of the shoe would be sufficient, in addition to closing the hole in the tube. He gave these directions to the garage man, feeling that if he omitted them that only the tube would be repaired and that the tube would eventually pinch in this hole. He also suggested that the hole be filled with repair compound in order to seal it and exclude moisture. He gave these directions, not knowing the internal condition of the tire.

The garage man transmitted the information to the tire man who followed the orders to the best of his ability. When he took the tire off of the rim he found that the puncture was not a recent one as the owner had assumed but that the cut was of long standing and that moisture and dirt had already rotted and cracked the fabric for a long distance from the small hole. The puncture was really a slow blowout due to the pinching of the

tube in the hole. The sharp stone had not cut all the way through but had left a passageway for water and dirt, and these agencies had gradually weakened the fabric until the tube pinched at this spot. Clearly the tire demanded a regular vulcanized repair but the owner had specifically requested that this be not done, but instead he wanted a patch laid over the hole.

If the tire man had been dealing direct with the owner the case might have been different, but as it was the only thing to do was to follow directions, putting in a patch—a blowout patch—a blowout patch, for nothing smaller would cover the large weak spot which had developed. This was done and the fact was explained to the garageman, but he forgot to transmit the information to the owner.

The tire was put back into service, and, after running about 500 miles, it blew out one rainy night. By that time the fabric of the tire was so badly rotted that it was hardly worth repairing. The trouble might have been avoided by permitting the tire man to use his judgment. However, there are pitfalls in this course also. If the tire man had been given a free hand he would have built in a new section at a cost of about five dollars to the owner. The latter, expecting a bill for a small tube repair and a small

patch on the inside of the casing would have felt that he was being imposed upon by a charge of five dollars. He would have been certain that the tire man had been guided by a desire to make business.

The lesson that this experience indicates is that it pays to examine the inside of the tire whenever possible. Have the garageman or tire repairman, as the case may be, take the tire off of the rim and examine it carefully with him. Then discuss with him what should be done. It is a mistake to try to diagnose tire troubles by examining the outside of the shoe.

Oil Pressure Gauge

The oil pressure gauge on the instrument board, on many cars, will show you when your engine oil should be changed. When the oil is new and clean, it is much thicker than it is when old and dirty. The longer the oil is used the thinner it gets. After it has been used 500 or 1,000 miles or so it becomes too thin to lubricate the engine properly, it is so thin that it will not keep the various wearing surfaces apart. When this happens the engine power will drop off rapidly, particularly when the engine is warm.

The distance that the car may be run before the engine oil must be changed varies greatly with different cars. If the piston rings are tight and

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If you like quick gasoline service, if you are in a hurry when you are touring, always stop at the Bowser-equipped filling station.

The Bowser Chief Sentry will deliver 20 gallons of gasoline in one minute—or 10 gallons in 30 seconds.

The Bowser Chief Sentry, with the piston-type measuring pump, is the most complete gasoline-dispensing apparatus ever built.

The Chief Sentry assures you of full measure. The sight glass shows you the level of gasoline before pumping begins. A tally bell rings at the completion of each gallon pumped. A dial registers the number of gallons delivered.

The centrifugal water separator takes out all water and sediment and assures you dry gasoline—gasoline that yields most mileage and least carbon.

If you will patronize Bowser-equipped filling stations you will get most mileage per gallon of gasoline and least carbon-caused engine trouble. Look for *Bowser* on the pump.

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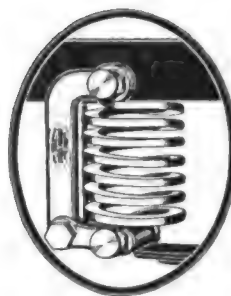


STEEL WINGS

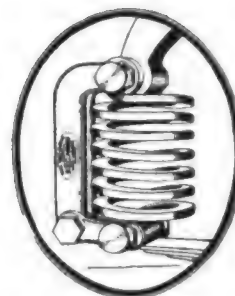
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Pacific Coast Distributors

if the intake gases are so thoroughly heated that little or no liquid gasoline gets into the cylinders, then the oil need not be changed so frequently as when these ideal conditions do not prevail. All of which is preliminary to explaining that thick new oil will show a greater pressure on the gauge than thin, old oil, at any given car speed. Thus if the gauge registers two pounds at twenty miles per hour just before the oil is changed and three pounds at twenty miles per hour just after the oil is changed, then it is plain that when the oil pressure drops to two pounds at this speed it is time to change it again.

Injuring the Battery

When touring, the generator produces far more current than the car requires or the battery can absorb. The excess injures the battery. In other words, on a long day's run, the battery may become fully charged by noon and, if so, all current pumped into it during the afternoon is excess charge. This excess causes the active material on the grids to break off slowly and drop to the bottom.

The "life" of the battery is measured by the rate with which this material falls off, for this material is to the battery what the tread is to the tire; it is its mileage. The slower it falls off the longer the life. This material falls off slowly even when the battery is carefully handled and overcharging simply increases the rate and shortens the life correspondingly.

In order to prevent severe overcharging many motorists, when touring, run with their headlights on. This practice is commendable, but it is a problem to know just when to switch the lights on and off. If they are turned on too soon or left on too long, the battery may be undercharged and that is not good for it. On the other hand, if they are switched on too late overcharging will occur.

Fortunately, there is a very simple way to determine the condition of the battery. The tone or pitch of the horn is a good indication of the fulness of the battery charge. When the pitch is highest the battery is fully charged. Therefore when the tone of the horn is a maximum it is a good idea to turn on the lights and to leave them on just as long as the tone of the horn does not change, but if it should drop ever so slightly the lights should be switched off.

Breaker Points

Spasmodic missing at a speed of 20 to 30 miles per hour suggests that the breaker points need attention. Probably they are worn and pitted and require filing and adjusting. Occasional difficulty in starting the

engine, and tendency of the engine to stall when idling, are symptoms which will probably be noted at the same time. Missing at these speeds, of course, may be due to many other things, including dirt in the gasoline, a temporary short circuit, a loose connection, or a sticking valve or weak valve spring.

A Handy Receptacle

An ordinary gallon oil can with a screw top makes a good emergency gasoline can. It is a handy receptacle which may be lashed to the running board or otherwise stowed about the car when touring. It probably will not be needed, but it is a very comfortable thing to have around when the fuel supply unexpectedly gives out. In using such a can, however, it is important to carefully seal the screw cover or plug. Shellac is excellent, but if this is not available, soap may be used. Unless the plug is sealed the gasoline will slowly evaporate and will disappear entirely in four or five days.

Battery Troubles

After a car has been used for some 20,000 miles it is not unusual to find that the battery is weak and that the starter balks a little now and then. Often enough, both of these troubles are due to a short circuit in the starter cable. Usually there is a metal part against which the cable may slowly chafe. There is no good reason why this should be so, but usually it is the case. Sometimes it chafes against the speedometer shaft housing, and then again it may rub against the sharp metal edge of the battery housing and usually there are other places where the cable may rub its insulation away until the bare wire is exposed. Whenever the exposed wire makes contact with some metal part of the car a short circuit occurs. The short may be temporary, depending for its "make" and "break" on the vibration of the car and it may be permanent. In the former case difficulty may occasionally be experienced in getting the starter to work, that is, whenever the short is in effect. And, of course, any loss of current through the short weakens the battery. If the short circuit becomes permanent the starter will refuse to work and the battery will quickly assume a badly discharged condition.

One remedy is to put in a new starting cable, but usually this expense and trouble may be simply avoided by the use of some tire tape and a piece of wood. It is well to use a piece of wood to separate the chafing parts; tire tape alone is not sufficient. The wood acts as a foil and prevents

contact. The wood stick should be laid along the cable over the spot where the insulation is chafed and it should be securely taped at either end to the cable.

Dirt in the Needle Valve

A dripping carburetor is most frequently caused by dirt on the seat of the needle valve. The remedy is to press the needle firmly into the seat, rotating it back and forth the while. If this does not cure the fault, hold the needle valve against its seat with a slight finger pressure. If the leakage continues it shows that the seat and valve need regrinding. If it stops it shows that the float mechanism is worn, stuck or broken or that the float is logged with gasoline. If shaking the float close to the ear proves that there is gasoline inside of it, place the float in tepid water. Air will thus be forced out of the hole and its location thus disclosed. After marking it, drill a small hole in the float from which to drain the gasoline. After the float is dry fill both holes by soldering them.

Heavy Hose Connections

If a rubber hose connection leaks, the usual remedy is to tighten the clamp. But sometimes the clamp may be drawn up as far as it will go and still there is some leakage. The leak may be stopped by removing the hose clamp and placing two or three layers of tire tape under it. Then when the hose clamp is put back it will grip the hose so tightly that leaking is impossible.

A Bag for Tools

It is such a simple matter to make a roll or bag for housing the tools that every motorist should have one. Take a strip of canvas or duck about twenty-four inches wide and as long as desired. Usually a yard length is sufficient. Wherefore two-thirds of a yard (by one yard wide) is about the right quantity to order. Double the material back on itself so as to make a pocket 8 inches deep with a flap of the same depth. Then stitch vertical compartments of various widths to accommodate different tools. It is a good plan to start with a compartment a half inch wide and increase gradually to one two and one-half inches wide. After the tools have been slipped in place in their individual pockets cover them with the flap and then roll the bag up, fastening it with a stout piece of tape or a strap.

Removing a Rusty Nut

A nut which is rusted so tightly in place that it cannot be moved may frequently be loosened by dousing it with kerosene and allowing it to stand. Sometimes a few minutes is sufficient

Exide

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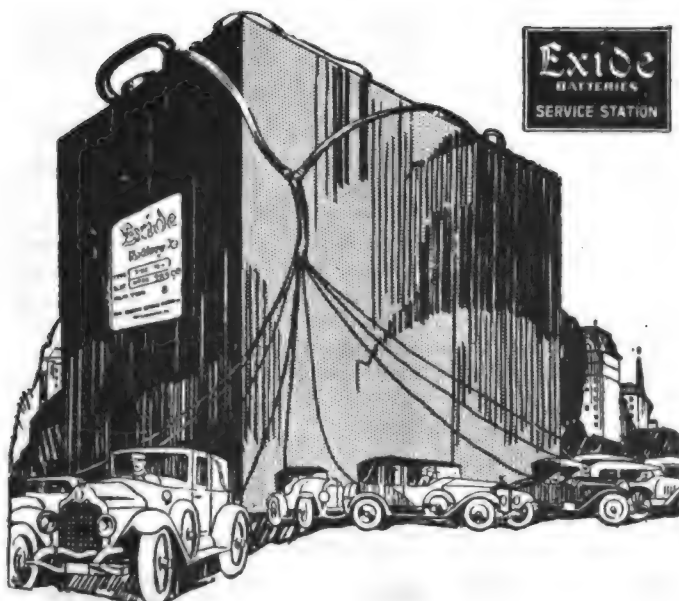
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Rolls-Royce quality—the best in motordom—is expressed in the type B 6 Wire Wheel. Our Engineers designed beauty and strength for the wheel equipment of this quality car and such others in the group as Packard, Marmon, Cadillac, etc.

Furthermore, by reason of their beauty and distinctiveness, their quick tire-change convenience and their easy riding qualities, Wire Wheels not only add greatly to the pleasure of motoring but they are a sound investment from the standpoint of ECONOMY.

Any of the branches or service stations listed below can supply Wire Wheels for any car. And—their service will be found to be prompt and efficient.

The illustration shows the B 6 Positive Locking Hub Cap type Wire Wheel—standard equipment on many of the highest priced cars.

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Seven Eleven Service Co., 1301 Broadway, Fresno	Wire Wheel Sales & Service Co., 1807—5th St., San Diego
Marshall Tire & Battery Service, 918 Ninth St., Modesto	The Fair-McQuoid Co., 399 South First St., San Jose
	W. L. Maxwell Co., 228 No. El Dorado St., Stockton

time for the kerosene to work in and cut the rust and then again a day may be required. Sometimes a refractory nut may be loosened by heating it. Most nuts found on automobiles may be started, regardless of how tight they may be, if a hammer and a cold chisel are used on them.

Locating Leak in Manifold

A lighted cigarette or cigar may be used to locate a leak in the intake manifold. Have the engine running and then place the smouldering cigar or cigarette at various suspected points. Smoke will be drawn in wherever there is a leak. No anxiety need be felt in using this method that there is danger in setting the car on fire. The glowing coal on the end of a cigar, cigarette or in the bowl of a pipe, is not sufficiently hot to ignite gasoline fumes, although it is worth adding that a match flame is. Another good method is to cover the suspected points with cylinder oil, and it will be noted that where the leak occurs the oil will be sucked in.

Two Types of Horns

There are two kinds of electric horns, motor driven and vibrator driven. If your horn is motor driven the commutator of the motor should be cleaned about once a month. Remove the cover and with the horn motor in motion clean the commutator with a little Three-In-One oil or light machine oil, moistened on a cloth. At the same time the bearings should be lubricated with this oil. Very frequently when a motor driven horn refuses to work it is because the commutator requires cleaning.

Care of the Clutch

In caring for a multiple disk clutch with cork inserts one prominent manufacturer advises that a mixture of half kerosene and half cylinder oil be used, and that the old mixture should be drained out once a month and a pint of fresh mixture introduced in its place.

Storing the Car

If the car is to be laid up for several months it should be specially prepared for its long rest. The wheels should be jacked up and the tires deflated. Then they should be wrapped with paper or cloth to keep the light away. A better plan is to cover the whole machine with a cotton or paper bag cover. The radiator should be drained and it is a good plan, too, to drain the oil from the engine, cleaning the system with kerosene and putting in fresh oil. The removal of the old oil is desirable be-

cause if it is allowed to remain it is likely to gum and clog the passages. About a half pint of oil should be injected into each cylinder to prevent the cylinders and pistons from rusting fast. The storage battery should be taken to a service station for care. All metal parts likely to rust should be smeared with grease.

Brightening Enamel

Enameled parts can ordinarily be kept bright by rubbing them with a soft cloth and any good body polish. But if they should lose their luster and become dull, they can be brightened by applying the following solution: Three ounces of oil of citronella; 1½ ounces of oil of cedar; 1 pound of paraffine oil; one gallon turpentine. Apply with a soft cloth and dry with a clean flannel.

A Slippery Bolt

When the threads of a bolt or stud are so badly damaged that the nut cannot be screwed on, a remedy which anyone may employ is to file the thread grooves smooth again with a three-cornered file.

In Soft Ground

When a soft piece of ground is encountered, such as a hub-deep mud hole, avoid it if possible, but if it cannot be dodged drop into second and hit it with as much speed as your judgment dictates. The greater speed the more chance there is of coasting through to the hard ground beyond. Above everything else, the car should be kept moving. If second is not powerful enough, go to first. Once the car stops, it is likely to become mired, but as long as it is kept moving there is a good chance of pulling safely through. However, if it should become stuck, it is frequently possible to back up, and then hit the mud hole again at a slightly different spot or with more speed.

Use the Hand Brake

When the car is left at the curb it is advisable to turn off and lock the ignition and apply the hand brake. Failure to do these things is likely to cause trouble. If the engine is left running there is the chance that someone will steal the car, or some child run amuck with it. The same holds true to a lesser extent if the switch is not locked. The habit of applying the hand brake is one that every motorist should cultivate; otherwise sooner or later the car will be parked on an apparently level spot that nevertheless has some slope to it, and an accident may occur.

The Spark Lever

Few drivers appreciate fully the advantages of using the spark lever. But you will note that the expert who makes such a wonderful demonstration nearly always has his hand on the spark lever. It is only when a level road stretches ahead of him that he seems to relinquish that little lever. By varying the lever position with the speed he obtains that smooth slow down in traffic without using his brake; and that easy pick-up on high gear, with no signs of motor labor. The pick-up is much improved if the spark lever is gradually advanced as the motor gains speed, bringing the lever up to about halfway at the first touch of the accelerator and then advancing about half an inch for every 5 miles per hour as the car gains speed. These directions, of course, apply when the car is accelerated on high from an initial rate of only 5 or 10 miles per hour.

When the Car Skids

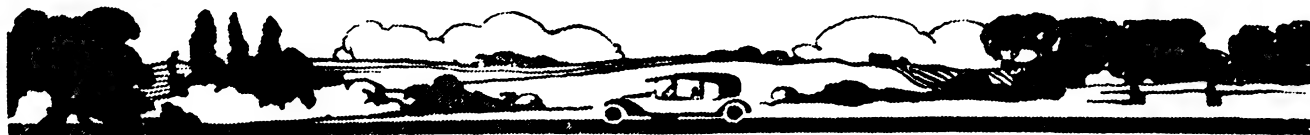
When a car begins to skid the first thing to do is to take the foot off the accelerator pedal. Applying the brakes will only aggravate the skid, therefore recovery must depend on steering. Usually the skid may be stopped by steering in the opposite direction from the skid. If a stop is imperative, it is best to defer applying the brakes until the car is headed straight, and then they should not be applied with sufficient force to lock the rear wheels.

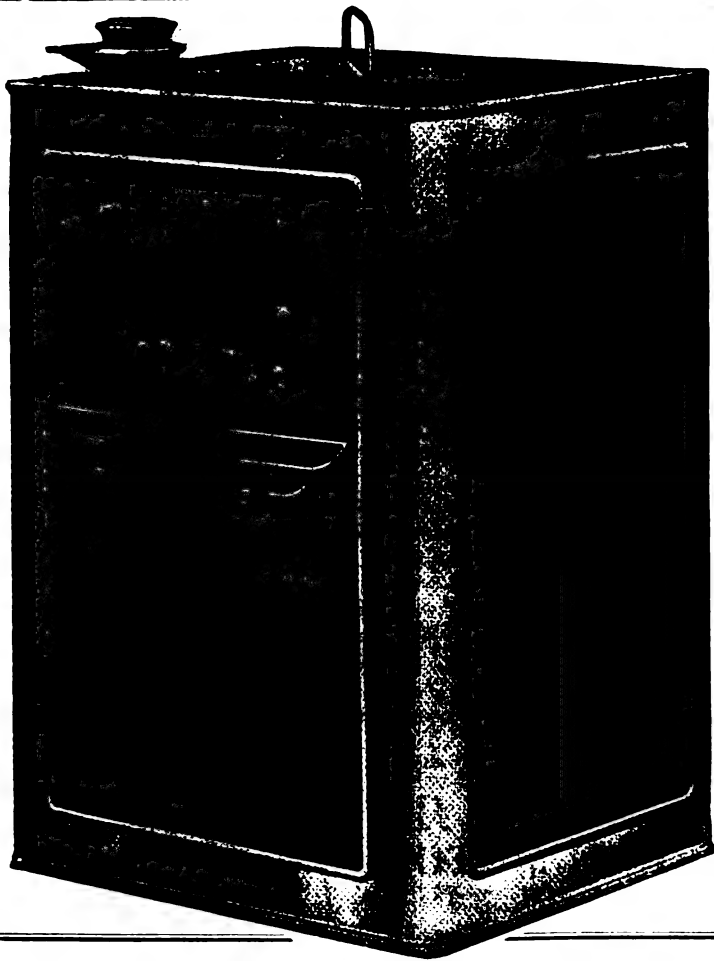
Turning on Wet Asphalt

When turning a corner on wet asphalt pavement the front wheels may skid. The safest method is to shut off the power, but there is another way. As soon as the front wheels begin to slide, apply the brakes suddenly just enough to lock the wheels for a moment. The momentary skidding of the rear end will help the action of the front wheels. Then, after the brakes are released, a touch of the accelerator will bring the car around the corner.

Finding Missing Cylinder

When an engine starts to miss, one of the easiest ways of determining which cylinder is at fault is to feel the spark plugs. If one cylinder has been missing for any length of time, it will be considerably cooler than the others, and the difference can readily be noted by touching the different spark plugs. This method cannot only be employed when the cylinder is entirely dead, but also when it fires irregularly, provided of course that the irregularity is sufficient to make a noticeable difference





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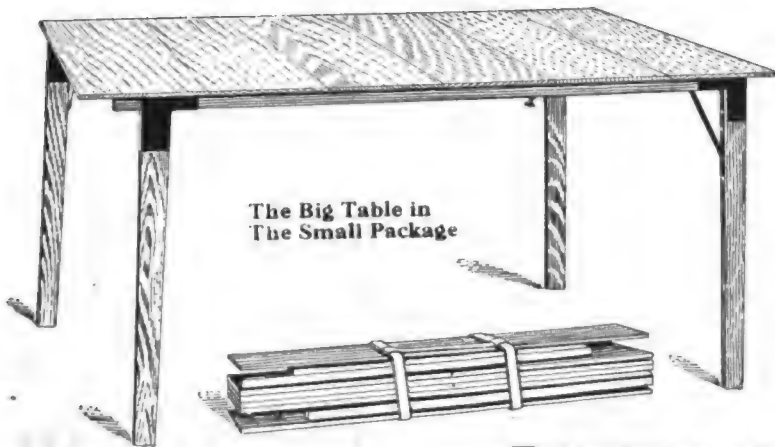
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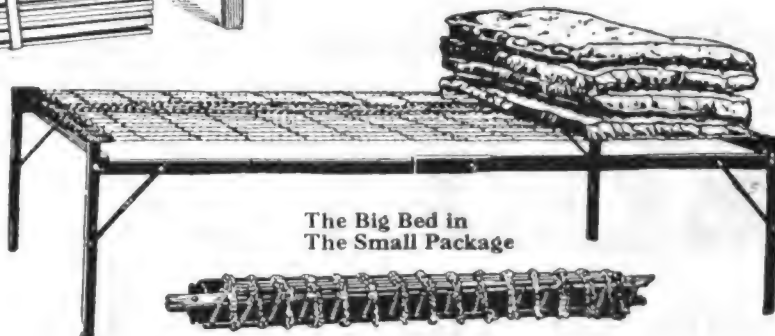
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in temperature. In most cases it will be found that the difference in temperature is enough to be felt.

Meshing the Gears

If after starting the engine it is difficult to engage first gear preparatory to letting the clutch in, try engaging the clutch just for an instant with the gear lever in neutral. This action will cause the gear shafts to spin, and in spinning meshing of first gear will be found to be easy.

A Filler Cap

If the filler cap on the gasoline tank becomes lost it is advisable to wrap a piece of cloth around the opening, securing it with a rubber band or a piece of cord. Otherwise, dirt may enter through the opening and cause trouble.

Spring Lubrication

When it comes to the question of lubricating springs it should be pointed out that there are two schools of thought. One school believes in lubrication and the other one does not. Adherents to the latter idea include not only some automotive engineers, but

also a number of motorists. Some engineers not only do not believe in spring lubrication, but going to the opposite extreme believe that the surface of the spring leaves should be roughened by sand blasting. Motorists who object to spring lubrication claim that most spring breakage can be eliminated if the leaves are not lubricated. They hold that spring lubrication is an advantage in that it makes the springs more flexible, but that in most cases it makes them so flexible that when the car is used on rough roads the springs are stressed so highly that they break.

Letting the Clutch In

It is not necessary to race the engine when letting the clutch in. On the contrary, as the clutch is engaged the throttle should be opened just enough to prevent the engine from losing any speed. It is possible to so co-ordinate the engagement of the clutch and the opening of the throttle that the engine maintains practically a constant speed while the clutch is being let in.

Changing to Second

It is not necessary to run more than 4 or 5 feet in low gear when starting off. Nothing is gained by speeding up to a maximum on this gear. The change to second should be made as soon as the car is rolling. The only reason for starting on low gear when on the level is to minimize clutch wear. Less slipping is experienced on low than on second or high gear. Therefore, as soon as the car is rolling it is permissible to shift to second.

Keeping in the Road

When the rear end of the car slides off toward the ditch on a road which is slippery and perhaps heavily crowned, the correct thing to do is not to apply the brakes but to slip into second gear and open the throttle wide. This is good advice as long as the front wheels remain on the road. Assuming that it is possible to keep the front wheels on the road, slipping the car in second gear is pretty certain to bring the rear end back in place again. The object in using second is to speed up the car and further to insure against it stalling.

HERE AND THERE IN MOTORDOM

Associated Motor Industries

Will I. Ohmer of Dayton, Ohio, placed at the head of all operations of Associated Motor Industries, the newly formed \$80,000,000 automobile merger, is founder and owner of one of the largest plants in America making ignition systems for automobiles. Ohmer is not only a leading production expert, but is well known as a humanitarian and for his advanced ideas in dealing with labor.

In Associated Motor Industries, Ohmer plans to carry standardization and large quantity production to the farthest point ever reached in quality cars. The merging in Associated Motor Industries of fourteen manufacturing and assembling plants in seven states, will give the corporation the opportunity to apply standardization principles on the largest scale.

The personality of Ohmer will be of interest to all wage earners in the United States as his wage policies begin to go into effect in the far-reaching activities of Associated

Motor Industries. In the first announcement of the plans of Associated Motor Industries, Ohmer came out with a positive declaration against a policy of wage reduction.

"Good wages must be paid," is his slogan. He declares that workers must have the opportunity to earn more money instead of less. Efficient methods of manufacture will enable the workers to earn larger pay, he asserts.

Improvement of all the conditions surrounding employment has always been Ohmer's first thought. He believes that high production can only be attained by getting the full co-operation of the worker, and that the worker's co-operation is given when he is happy in his surroundings and given the opportunity to be prosperous.

New Signal to Warn Drivers

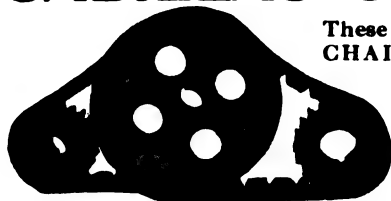
Traffic has become so heavy and accidents so numerous that the law is to be enforced requiring an approved mechanical or electrical device on all motor vehicles that can not make a distinct hand and arm signal.

All cars are subject to this law at one time or another, especially in cold or rainy weather, when the windows are closed or the side curtains are up, making it impossible for the driver to give the arm signal. These are the times that proper signals are most important, with slippery streets and windshields obscured.

Even in good weather the arm signals are not entirely satisfactory. We all have experienced the man in front who does not give a proper signal when stopping or making a right or left turn, consequently we are never sure that he is giving the correct signal.

A recent signal that has been given the strict tests required by the Motor Vehicle Department and has been approved as completely meeting the requirements of the law is the Safety First automatic signal, distributed by Smith & Hicks of Oakland, who have the Pacific Coast sales rights. This signal is finished in black, and adds to the appearance of any make of car. It is noise-

CADILLAC OWNERS!



These LINK-BELT SILENT CHAIN DRIVES have been thoroughly tried out on CADILLAC CARS. They will give you quiet and satisfactory service for many thousand miles. They are in stock at San Francisco and Los Angeles

ready to be installed in your car. Order direct or through your garage.

The LINK-BELT UNIT SILENT CHAIN marks an important step forward in the art of Silent Chain Driving as applied to automobiles.

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Now in our new daylight shop — Fully equipped to repair any make of car —

NOTE!!

Motors with removable heads bored without taking out motor. Oversized pistons fitted.

WHY NOT let practical men of long experience, who give each job *personal* attention, figure your next job? — *Satisfaction guaranteed.*

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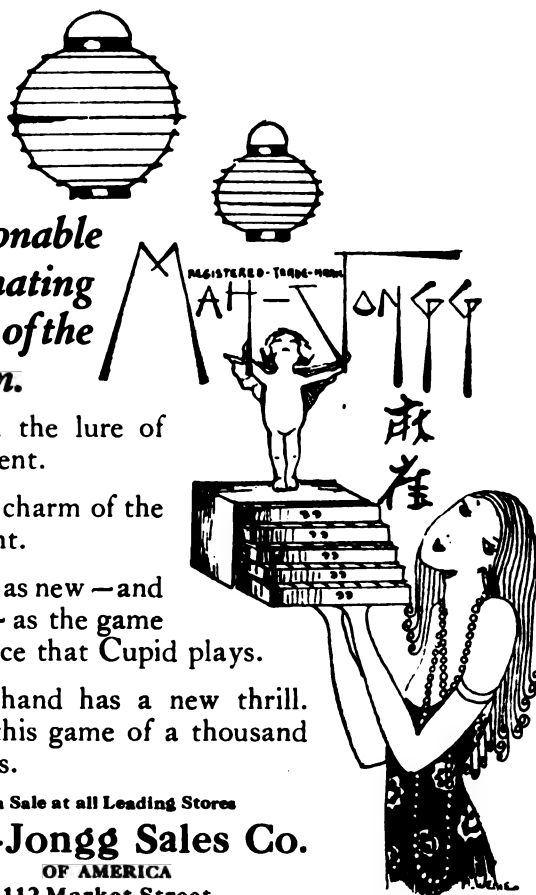
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WHAT STEAM IS TO
THE LOCOMOTIVE.



UNION OIL COMPANY OF CALIFORNIA.

In writing to advertisers please mention Motor Land

less, and, with the Safety First Sunlight lens, is the motorist's protection always—in bright sunlight as well as in fog, rain or by night.

An added feature of this signal is that when the brake pedal is pressed down slightly to slow the car, the signal shows "slow." When the brake pedal is pressed down firmly, so that the car must stop, the signal shows "stop." The right lens is green and the left lens is red, controlled by a switch in a convenient place that is operated almost mechanically after the first time in use.

A New Shock Absorber

Steel Wings are the latest idea in shock absorbers, and, according to the Lathan Auto Supply Company of San Francisco, Pacific Coast distributors, are enjoying a large sale and meeting with enthusiastic approval.

The main part of the device consists of an oil-tempered spring of high-grade steel attached to the car between the frame and the spring end at the shackle point. This spring is a flat spiral, which it is said can not be weakened or broken by compression to its extremity, and is openly constructed to prevent its free and easy action being affected by mud, sand or water. A baked-enamel finish prevents rust.

It is claimed that Steel Wings not alone add to the comfort of the passengers by increasing materially the resiliency of the springs and preventing side swaying, but also minimize the wear and tear on both the car and the tires. Distribution is being made through dealers.

New Plan for Painting Cars

Much interest has been shown in automobile circles in the new method of automobile painting to be used by Larkins & Co. "The new process is called 'Ry-Namel,'

and it has claimed for it the following features," said Allan Larkins.

"It is elastic, expanding and contracting with the metal throughout the entire life of the finish. Thus, it will not crack.

"It will not stain from water, mud, gasoline, grease or oil.

"It stands up with ordinary care for two years, or even longer. The first test cars have been out two and one-half years, and are still in good condition.

"It does not scratch easily, and if scratched or gouged can be easily matched and replaced, or one additional coat will make the finish like new.

"When completed, the car has a rich satin finish which gradually brightens with cleaning.

"Where good automobile painting takes from four or five weeks to apply, Ry-Namel can be applied in ten days or two weeks, and is thoroughly dry and ready for road use as soon as completed. No sponging to harden the finish is necessary."

Machine Registers Vibration

Applying the principles of the seismograph, which has long been successfully used to record earthquakes, the Gruss Air Spring Company has perfected a portable instrument for registering road vibration in automobiles.

The instrument is called a "vibrometer" and by means of an ingenious pendulum and spring arrangement, geared to a train of adding wheels, road vibrations are mechanically registered and added as the car travels along.

An indicator hand similar to that of a speedometer swings along the dial in exact relation to the vibrations the car receives, and vibrations are automatically added, so that the total number may be read at any time.

Before the perfection of the vibrometer, just what the riding qualities of an automobile were was entirely the matter of judgment of individuals. But now, the Gruss Air Spring Company places the vibrometer on the floor of an automobile, drives the car at a certain speed over a stated distance, and at the end of the trip has an exact record of the riding qualities of the car.

The vibrometer is being used by the company in an exhaustive series of tests, cataloging the riding qualities of all makes of automobiles without and with Gruss Air Springs.

Truck Replaces Locomotive

Rather than do away with their service entirely, as many have done, because their line was operating at a loss, officials of the Oil Fields Short Line Railroad of Oklahoma decided recently to motorize their equipment. Instead of using a steam locomotive to haul a mixed train they now operate an FWD rail car over their eight-mile run and have cut their operating and maintenance expenses to the minimum.

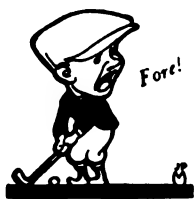
The Oil Fields Short Line Railroad operates between Dilworth, a small town in the Oklahoma oil fields, and Clifford, Oklahoma, where it connects with the St. Louis and San Francisco R. R.

The FWD rail car is equipped with a passenger body capable of accommodating approximately twenty-four passengers. The car is equipped with M. C. B. couplers front and rear, so that when it becomes necessary to haul freight a box car or flat car may be coupled on and hauled on one of the regular passenger runs. Regular schedules are maintained and, though this short line is now operating at a profit instead of a loss, patrons of the line are afforded just as efficient service as was formerly given.

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Polished Aluminum or Baked Enamel!
Yes, we install them.

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Preparing for Left turn; Slowing up.

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Save yourself from collision automatically and be protected by State Law. This Signal has an attractive appearance, is infallible and noiseless, and reasonably priced.

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"BETTER BE SAFE THAN SORRY"

Long Life for Batteries

Many conditions conspire to undermine the long life and usefulness of a storage battery and try its toughness and ability to withstand abuse.

Hard, fast driving over rough roads or through mud or dust give a battery punishment that will shorten its period of service, while neglect caused by infrequent testing and lack of water are equally as hard on the cells.

"Other causes of battery failure before the normal period of its life is up," according to the Gill battery dealer, "include long driving, much starting and stopping, cold weather, hot weather, and excessive use of lights. Many motorists install electrical devices beyond the rated capacity of the battery without realizing that they consume energy and that provision must be made for replacing it.

"Ofttimes the hold-down clamps are loose, the distributor or generator, worn or dirty and the motor may have tight bearings or be using too heavy oil. Again poor carburetion means unnecessary use of the battery."

"Loose connections and short circuits in the switch box very often prevent a battery from giving service at all. These are many of the conditions which the expert battery men can detect and emphasize the importance of motorists visiting their battery station regularly at least once a month for inspection."

New Sales Chief Named

W. C. Rutherford, vice-president in charge of sales of the B. F. Goodrich Rubber Company, has announced the appointment of H. M. Bacon, to special sales work in the tire division of that corporation.

For several years Bacon was connected

with the B. F. Goodrich Rubber Company as head of one of its tire sales divisions, and left to accept the vice-presidency of the McGraw Rubber Company of East Liverpool, Ohio.

Two years ago he became connected with the Thomas Cusack Company, outdoor advertisers, as their Cleveland representative, and it is from there that he comes to Goodrich.

Bacon's duties will be largely confined to executive direction and development of sales in the tire division where he has an outlet for his wide knowledge and experience.

Service Station Moved

Petry and Brandt, repair men, who have recently been appointed official Stutz and Apperson service men, have outgrown their old quarters on Bush St., and are now located at 1625 Pacific Avenue, between Polk Street and Van Ness Avenue.

"Our new plant," said Vic Petry, in speaking of the change, "is equipped with every up-to-the-minute device to handle repairs in the most rapid and efficient manner possible. With daylight in all parts of the shop less time in making repairs and better work are a direct result. Our new type cylinder boring machine bores removable head type motors without taking the motor out of the chassis. Every repair job of any description receives our personal attention."

New Labor-Saving Devices

The development of the motor vehicle during the past twenty years has in importance and volume surpassed that of any other industry in the history of the world.

During this time refinements and labor-saving devices have been added without number. But until the advent of the Law-

rence carrier nothing had been done to help the motorist lift a spare wheel or rim up into place on the back of the car.

The Lawrence carrier is said to be the first and only mechanical means ever offered for lifting and lowering spare wheels and rims. It is in fact a wheel-lifting device and carrier combined.

By its use any woman can with one hand and with perfect ease lift the heaviest wheel or rim up into place on the back of the car and lower it again ready for use.

This carrier is interchangeable with all present carriers for disc wheels. It is also made for cars having wheels equipped with demountable rims. It is simple to operate and carries the wheel or rim in the conventional way. Its elevating mechanism supports no load when the wheel or rim is in place on the carrier. There is nothing about it to wear, rattle or get out of order. It is strongly built, and light, adding less than three pounds to the weight of the present carrier. It works equally well when spare wheels or rims are carried on the side of the car. It can be converted at will in less than two minutes into a carrier for either one or two wheels, without removing from the car.

A Cowl Ventilator

It is well known that the most efficient means of relieving the excessive heat condition in the front seat of the automobile is by a cowl ventilator. The Holtz Cowl Ventilator is said to offer several novel features, and is instantaneous in its operation. It requires only one-half turn to raise the vent to a position of maximum draught. This ventilator is made for all makes of cars, in various sizes. Both the top and the side vents can be operated by a centrally located control on the instrument board if desired.

THE SHORT WAY FERRY

SHORTEST AND MOST DIRECT AUTOMOBILE ROUTE BETWEEN
SACRAMENTO—Sonoma—Napa—Oregon
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SAVE TIME—SAVE MILEAGE
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Travel via the "SHORT WAY FERRY" on the fastest and most modern AUTO FERRY BOATS afloat.

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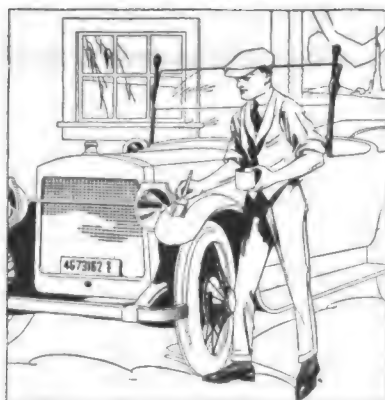


NO CURVES—NO GRADES

TIME SCHEDULE

LEAVE SHORTWAY DAILY		LEAVE VALLEJO DAILY	
7:00 a. m.	3:20 p. m.	6:45 a. m.	2:40 p. m.
7:30 a. m.	3:45 p. m.	7:15 a. m.	3:00 p. m.
8:00 a. m.	4:00 p. m.	7:45 a. m.	3:20 p. m.
8:30 a. m.	4:20 p. m.	8:00 a. m.	3:40 p. m.
8:40 a. m.	4:40 p. m.	8:20 a. m.	4:00 p. m.
9:00 a. m.	5:00 p. m.	8:40 a. m.	4:20 p. m.
9:20 a. m.	5:20 p. m.	9:00 a. m.	4:40 p. m.
9:40 a. m.	5:40 p. m.	9:20 a. m.	5:00 p. m.
10:00 a. m.	6:00 p. m.	9:40 a. m.	5:20 p. m.
10:20 a. m.	6:20 p. m.	10:00 a. m.	5:40 p. m.
10:40 a. m.	6:40 p. m.	10:20 a. m.	6:00 p. m.
11:00 a. m.	7:00 p. m.	10:40 a. m.	6:20 p. m.
11:20 a. m.	7:20 p. m.	11:00 a. m.	6:40 p. m.
11:40 a. m.	7:40 p. m.	11:20 a. m.	7:00 p. m.
12:00 p. m.	8:00 p. m.	11:40 a. m.	7:20 p. m.
12:20 p. m.	8:20 p. m.	12:00 p. m.	7:40 p. m.
12:40 p. m.	9:00 p. m.	12:20 p. m.	8:15 p. m.
1:00 p. m.	9:30 p. m.	12:40 p. m.	8:45 p. m.
1:20 p. m.	10:00 p. m.	1:00 p. m.	9:15 p. m.
1:40 p. m.	10:30 p. m.	1:20 p. m.	9:45 p. m.
2:00 p. m.	11:00 p. m.	1:40 p. m.	10:15 p. m.
2:20 p. m.	11:30 p. m.	2:00 p. m.	10:45 p. m.
2:40 p. m.	12:00 p. m.	2:20 p. m.	11:15 p. m.
3:00 p. m.			

*EXTRA TRIPS SUNDAYS AND HOLIDAYS ONLY *11:45 p. m.



Paint Your Own Car

It is easy to paint your own car if you use Fuller's Auto Enamel or Speedite Enamel. These two enamels are very easy to apply and give very satisfactory results.

To the list of auto necessities has been added No. 3829 Black Quick Repair Enamel. This is a dense black enamel which dries dust free in thirty minutes and hard enough to handle in an hour.

For touching up marred and scratched paint and for coating the undersides of fenders and floor boards it is unequalled. *This enamel does not contain asphaltum.*

Fuller's Auto Enamel—Speedite Enamel—No. 3829 Black Quick Repair Enamel

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Attaches to
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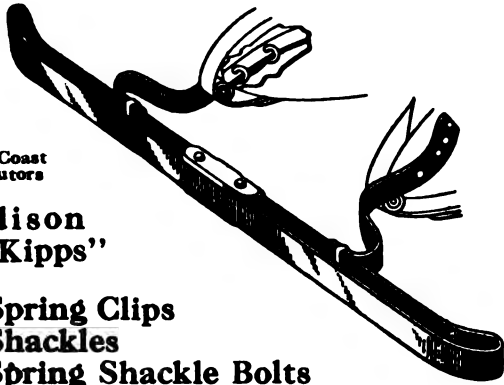
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Applegate.....Walmond Resort	Cloverdale.....Cloverdale Garage	Forest Glen.....Forest Glen Inn	Huntington Lake.....Huntington Lake Lodge
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Arcata.....Arena Garage	Coalinga.....Hotel Fox	Fortuna.....Hughes Hotel	Kelseyville.....Dunbar Garage
Atwater.....Atwater Garage	Coarse Gold.....Coarse Gold Hotel	Fowler.....Fowler Garage	Kerman.....Plaza Garage
Auburn.....Freeman Hotel	Colfax.....Colfax Garage	Fresno.....Sequoia Hotel	King City.....Hotel Camino Real
	Colusa.....Universal Garage	Fresno.....Valley Grill (restaurant)	King City.....El Camino Garage
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Ben Lomond.....Hotel Dickinson	Corning.....Maywood Hotel	Fresno.....Central Garage	Klamath Falls, Ore.....Acme Motor Co.
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Benicia.....Benicia Garage	Courtland.....Courtland Garage	Fresno.....Frank W. Hansen Garage	Kingsburg Tire & Battery Service Station
Bieber.....Big Valley Garage	Crater Lake, Ore.....Crater Lake Hotel	Fresno.....Earl Jackson Garage	Lafayette.....Lafayette Garage
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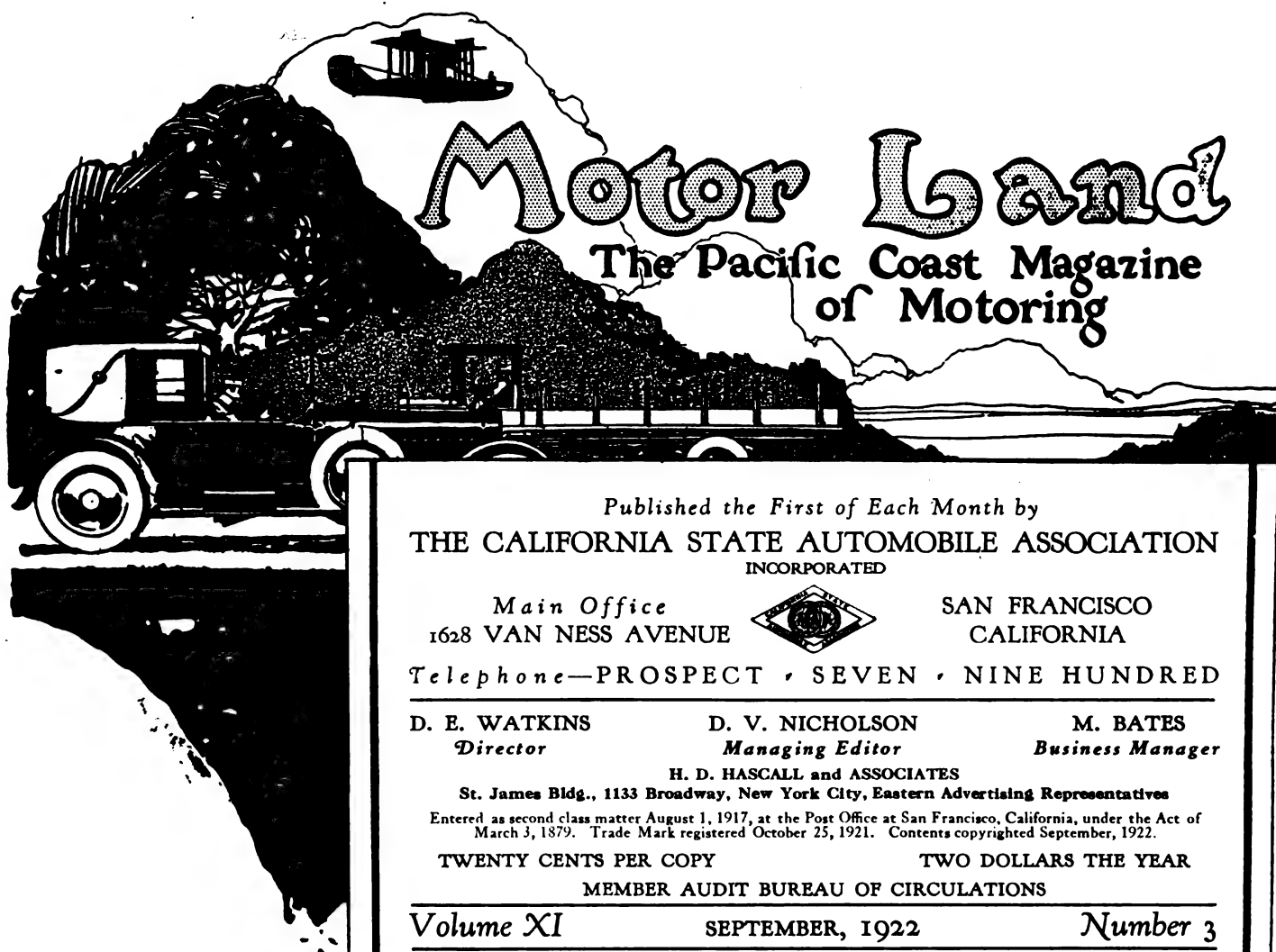
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Volume XI SEPTEMBER, 1922 Number 3

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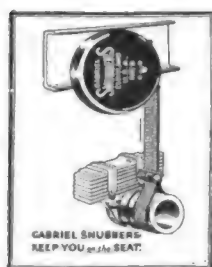
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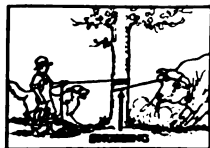


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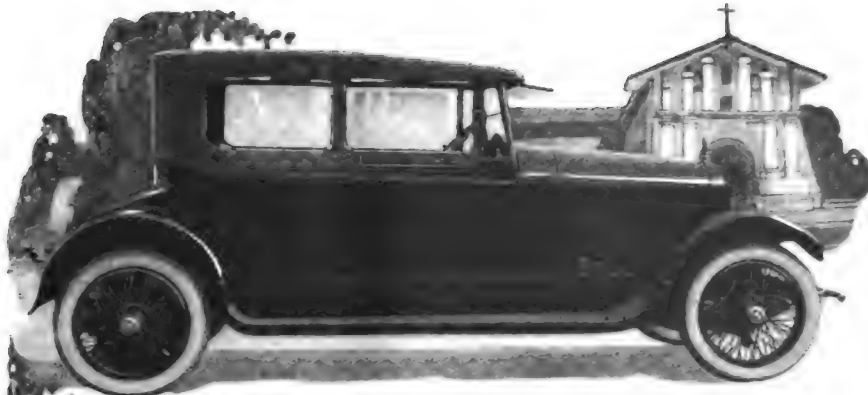
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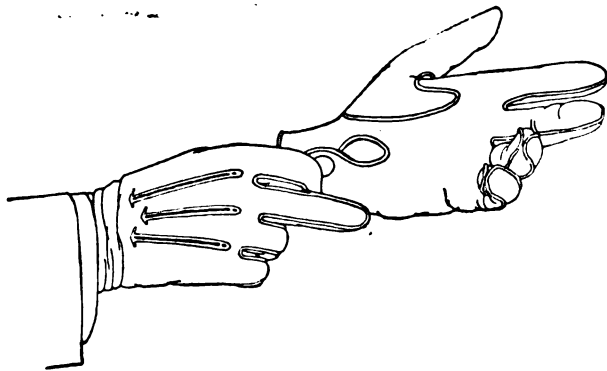
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Every "Angelus" Tire Cover is tailor made for each type and size of tire.

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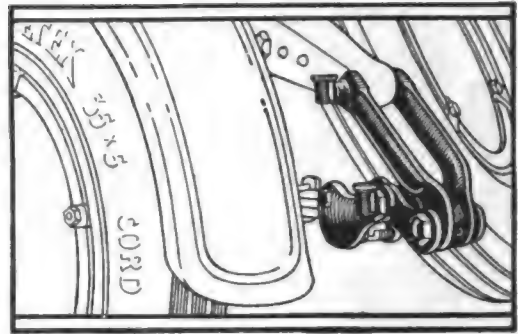
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Stop Shocks on Every Class Car

You owners of medium sized and big cars can have economical shock absorber comfort and protection as well as Dodge and Ford owners. S & S Shock Absorbers are saving tires, springs, gasoline and upkeep expense on thousands upon thousands of standard make cars, of all sizes, the world over.

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No Springs to Break No Parts to Rattle

S & S is the *springless* Shock Absorber (no springs to get weak; no light parts to break; nothing that wears quickly, rattles or needs replacing)—the shock absorber owners never take off until they trade in their cars—the one that gives delightful riding comfort with economical upkeep.

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Shock Absorbers

Here's Some Good News

The COAST TIRE AND RUBBER COMPANY

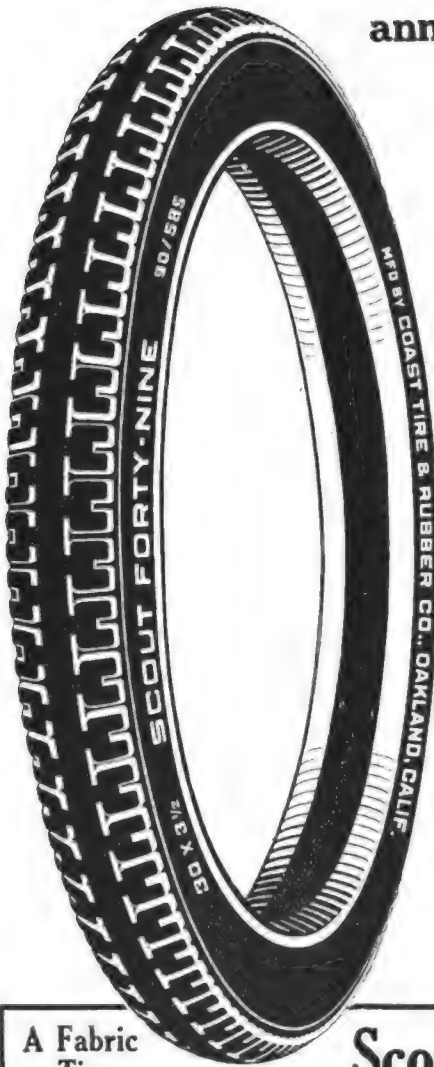
announces the addition of

Two New Tires

Priced to meet
the new demand

The Scout "49", a new design, standard size, non-skid tread, clincher type, fabric tire. The Coast Ranger, a specially designed cord tire, in both clincher and straight-side types, made in substantial oversize, with broad, heavy non-skid tread.

These two new type tires were designed by the same engineers, constructed in the same factory, under the same exacting supervision as the immensely successful, super-quality Coast Tires. Every detail of design, material, and construction combine to make these tires worthy of your entire confidence.



A Fabric
Tire

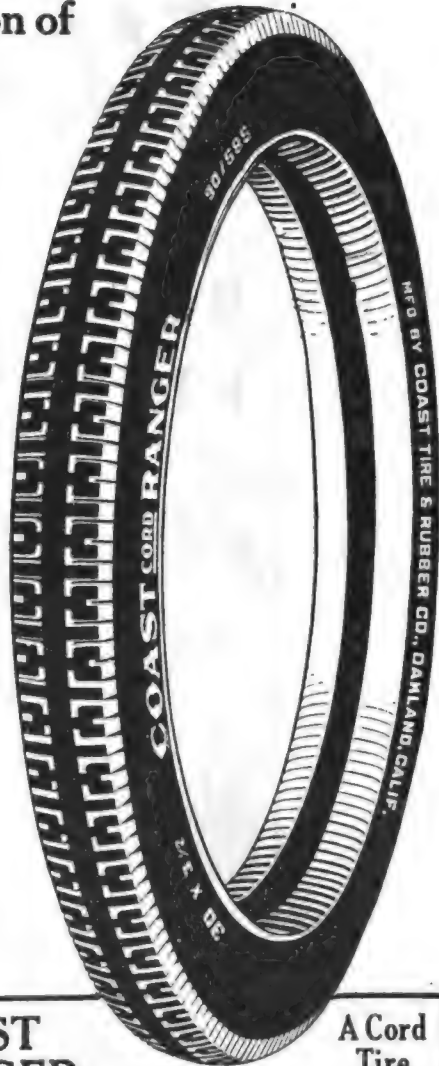
30 x 3
Clincher type

30 x 3 1/2
Clincher type

Scout "49"

\$9.49

\$10.49



COAST
RANGER

30 x 3 1/2
Clincher
Type.... **\$14.95**

31 x 4
Clincher
Type.... **\$22.15**

30 x 3 1/2
Straight
Side..... **\$16.25**

31 x 4
Straight
Side..... **\$24.00**

A Cord
Tire

COAST TIRE AND RUBBER COMPANY

Factory and Main Office
OAKLAND · CALIF.

"I've never seen a more efficiently organized manufacturing plant anywhere in the world," said Schwab, steel magnate, in interview with B. C. Forbes, regarding

Studebaker

BUSINESS AND FINANCE

By B. C. FORBES

NEW YORK, July 21.—(By Universal Service.)—Good concerns usually make good products. While chatting with Schwab



the other day, mention was made of the extraordinary success of the Studebaker Company. Schwab immediately remarked:

"I've never seen a more efficiently organized manufacturing plant anywhere in the world."

I once got President Erskine to show me over the whole works and it was a treat to me, as a manufacturer and knowing something about industrial plants, to see how excellently every operation was being conducted.

Ever since I have had great faith in the company and its management.

This happened long before the company's wonderful record began to attract so much attention.

WHERE manufacturing incompetence exists the buyer foots the bill and pays the costs of inadequate production facilities.

In a Studebaker you get tremendous intrinsic value.

The Studebaker Corporation's expertness, resulting from 70 years' experience in the manufacture of transportation vehicles, enables it to reduce production costs to a minimum. Its great buying power brings the cost of raw material per car to the lowest possible figure.

This Is a Studebaker Year!

Studebaker offers a wide choice in 3 chassis designs and 13 body styles

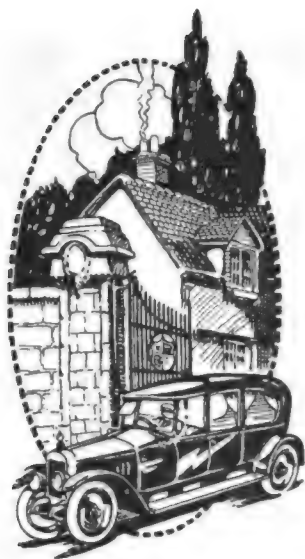
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CURRENT

COMMENT

The Second Peninsula Highway

DURING the past fortnight one more act was consummated making the much-talked-of east side highway down the San Francisco peninsula that much nearer realization. The act of the Finance Committee of the San Francisco Supervisors in promising the needed financial assistance to make the detailed surveys and acquire rights of way means more than the \$225,000 involved. It not only recognizes the urgent necessity of the project but it means that the undertaking is going to be completed according to a well-thought-out plan having in mind the traffic needs of the future.

Too much praise cannot be given to those organizations and individuals who have actively supported the idea ever since its inception; and the report of the engineers making the preliminary investigations is gratifying, for it showed not only capable engineering ability but broad-minded vision.

The plan that has been proposed is to construct a wide thoroughfare from Potrero Avenue and Army Street in San Francisco to Redwood City. This will consist of a 125-foot right of way and a 40-foot pavement. As near a direct line as possible will be secured and dangerous curves and railroad crossing entirely eliminated. Three miles in distance will be saved.

From Redwood City to the bay

shore it is proposed to construct another highway and then to build a bridge to the Alameda County side.

The total cost of the first unit of this project is now estimated to be \$4,791,000 and the cost of that portion of the bridge in San Mateo County with its connecting highway there is given as \$1,870,750.

There is still some difference of opinion as to where the exact location of the highway should be, whether exactly paralleling the Southern Pacific tracks south of San Bruno to Burlingame or a little east thereof, and likewise there is disappointment in some quarters as to the Highway Commission's decision to locate the bridge at Ravenswood Point rather than in the vicinity of Dumbarton.

These are matters of detail, however, and will ultimately be worked out in a manner satisfactory to all. The big idea is that for all practical purposes a location has been tentatively fixed and one upon which all future effort may be concentrated. It may be that the bridge location will be somewhat changed or that of the highway shifted, but that does not matter.

It is true that the amount of money involved is large, but San Francisco will pay its just share, for the value received will be worth many times the cost, and when it is finally completed

we will wonder how we ever did without this needed project in which all Northern California is interested.

Now that a well-defined plan has been presented and a financial start made, the California State Automobile Association wishes to make what it considers two pertinent suggestions.

The first is that the public continue to advocate the early completion of this project. That support will be of immeasurable benefit to those in authority and assist them in proceeding.

The second is that the directors of the Joint Highway District should by all means construct the road first and those portions of it which are of the most vital necessity.

Conditions today down the peninsula are deplorable, particularly between San Bruno and Burlingame. Only two weeks ago the Association's Good Roads Bureau took a traffic census there and found that between 7 a. m. and 8 p. m. on an ordinary Sunday 18,000 machines passed one point. At one time in the evening a machine passed every two seconds for a period of over an hour, all seeking to get back into San Francisco.

Those who have constantly advocated this project—the State Automobile organization for over two years—are jubilant over the progress that has been made.

The Flivverboob

ARE you a "flivverboob," Mr. Motorist? Perhaps you do not realize what a flivverboob is. He is a "jay-walker on wheels." Now every man who drives a motor has scorn for the jay-walker, the pedestrian who strolls aimlessly or heedlessly or absentmindedly through busy streets and gums up the traffic or

gets hit and congests the hospitals. But a "jay-walker on wheels" is a different proposition. Usually he is most of all contemptuous of the jay-walker on foot. Just because he is on wheels he thinks that he is superior to rules and has an inalienable right of way against all others, afoot or awheel.

To be a complete flivverboob one

must cut corners, break speed rules, take the narrowest chances at intersections, ignore crossing signals, cut around behind street cars, jump over tracks ahead of approaching cars and stop suddenly without giving warning.

A flivverboob can be cured. Sometimes it takes a coroner's inquest, sometimes a lawsuit for damages.



Upper Blue Lake—Round Top Mountain in the distance

THE LAND OF YESTERDAY

A Motor Tour Over California's Pioneer Trails

By H. S. FURLONG

THERE is a lure in the land of the unexplored, the land shunned by the lover of the paved highway, the land of mighty peaks and swift-flowing rivers, where the steep, rocky roads thread their way through shadowy forests whose big silences are not too often broken by the staccato bark of the muffler cut-out. There is a lure, too, in the land that is rich in the romance and history of the long ago, in the ghost cities whose now empty streets seemingly echo to the footfalls of their departed populations. Behind a roaring gasoline motor we climb mountain roads that saw the pathfinders and the hardy pioneers drive their horses and their oxen down the elusive trail to the land of promise. Seated on leather cushions we ride through dim canyons where once echoed the hurrying feet of the pony

express. Limitless the mountain peaks arise; unfathomable the pine-clad canyon depths yawn deep to the roaring river, gliding like a silver snake to the sea. Limitless the courage and endurance of the men of those other days—of Carson, of Frémont, of Sutter; unfathomable the genius and the inspiration of those who preserved the romance of the golden age for posterity—Bret Harte and Mark Twain.

Let us leave, then, for just a little while, the cares and the petty trivialities of our workaday lives, and travel, in distance, some six hundred-odd miles; in time, back seventy-odd years. Let us travel across the wide valley of the San Joaquin, where once spread afar the vast domain of the padres, into the Sierra foothills, scene of the wildest, the richest, the most tumultuous days the world has ever known, and, finally,

we shall climb up into the dim Sierras themselves, cold, passionless, inscrutable and eternal.

Route Over Lincoln Highway

The route to the land of yesterday follows the Lincoln Highway eastward from San Francisco, over the Altamont Hills and through the San Joaquin Valley to Oakdale. From Oakdale the road lies close to the Stanislaus River, climbing gradually but steadily up into the lower slopes of the Sierra foothills, a country of scrub oak and stunted pine, the grass brown and parched with the summer's drought and strewn everywhere with the evidence of chaotic volcanic action of many thousands of years ago.

Most prominent of these ancient volcanic formations is Table Mountain, erstwhile home of Truthful James

and rendezvous of one of the most notorious of bandits, Joaquin Murietta. Table Mountain can be traced through the Sierras for a distance of some sixty miles, but is most prominent in the region about Jamestown and Chinese Camp. Geologists tell us that in prehistoric times it constituted the bed of some now forgotten river, when a lava flow from a volcano swept down its channel. The forces of erosion have degraded the ancient land, but the hard lava rock has resisted the wear and tear of the ages and the mountain now stands, with its perpendicular walls and level top high above the surrounding country, a monument to the marvellous work of time.

We crossed through Table Mountain at Mountain Pass, scene of many a holdup. Behind the great, black lava rocks guarding the portal it was not difficult for the imagination to picture black Bart or the intrepid Murietta waiting with infinite patience the oncoming Stockton stage. Mountain Pass is the gateway to the land of yesterday; westward lies the world of today with its comforts and conveniences, its troubles and its cares; eastward rise the foothills and the dim Sierras, still steeped in the beauty and the romance of the long ago.

Into Jamestown or "Jimtown"

We followed along the bank of Wood's Creek into Jamestown, better known as "Jimtown," a pretty, picturesque little village which contains today perhaps five hundred souls. Jimtown has furnished the setting for many a song and story, and though today much of its glory has departed, it there still clings that intangible



The Old Wells Fargo express office at Columbia

atmosphere that the advance of progress can never quite efface. It is the center of the southern mining district, and the recent resumption of activity along the Mother Lode has contributed materially to the town's prosperity.

We passed through Jimtown's main street and followed the tree-shaded road that leads to Sonora along the winding course of Wood's Creek. More gold was taken from this stream, for its length, than any other in the world. Along its course are still to be seen signs of the early mining days—rotted flumes, caved-in ditches, partially demolished little rock dams, and old, decaying cabins with their sagging roofs.

It was growing dusk when we entered Sonora, Tuolumne's county seat. Sonora lies in a long, narrow valley with steep, pine-clad hills on either side and the barren, treeless summit of Bald Mountain looming like a sentinel to the north. Its main street, curving over hills and dipping into little valleys, with no attempt at grade, is flanked on either side by the old, substantial brick and stone buildings of the early days. Doors and windows are guarded by great iron shutters, affording protection against both fires and bandits in bygone days. There are, of course, many modern buildings in Sonora, notably the grammar-school building, which crowns the summit of one of the many hills like the Acropolis of Athens. Strangely enough, too, these newer and more imposing structures seem to be not at all out of harmony with those of that other age. For there is a certain charm, an elusive atmosphere about Sonora that neither time nor modern ways can ever take away. It seems in the very air, in the cool, clean scent of the pines, in the fragrance of roses planted by hands that are now stilled and forgotten.

Boasted Twenty Thirst Parlors

Before the great drought of a few years ago Sonora boasted of no less than twenty saloons to its two thousand-odd population. Most of these have now closed their doors or have been replaced by purveyors of commodities of a less exhilarating nature. In many of the old bars the entire outlay of fixtures, including mirrors, brass rails and the bars themselves, was brought from the East "around the Horn" and freighted overland from San Francisco.



Main Street, Sonora

Main Street was very quiet that night, but I could imagine the scene as Bret Harte saw it, with flashes of light flaring out across the otherwise unlighted street as the doors of the saloons and dance halls swung to and fro; bearded miners jostling one another in the rush for the gaming tables; the little ivory ball spinning musically in the roulette wheel; the faro dealer silently dealing out of his little silver box and as silently paying off and taking in the bets. Here perhaps sat the prototype of John Oakhurst, immaculate, coolly calculating, refusing liquid refreshment on the grounds that it "interfered with a profession that required coolness, impassiveness and presence of mind," dealing in a poker game where the limit was as high as the bright Sierra stars outside.

Gone are those days, but their charm and their romance still live, live in the pine-scented breeze sweeping the white streets, in the cool shade of quiet gardens and in the warm hearts of a friendly, hospitable people.

Next morning we departed for Columbia. The road followed a little stream, its banks honeycombed with tunnels and shafts, each representing human toil, perhaps human lives, hopes blasted or fortunes won. I recalled Mark Twain's definition of a gold mine: "A hole in the ground at one end and a damn fool at the other."

We climbed a short, steep hill and, surmounting its summit, dropped down into the Columbia Basin.

Desolation! As far as the eye could reach extended a jumbled mass of great, white limestone boulders, vast of height and grotesque of shape,



Columbia—"The City That Was"

reminiscent of some ancient burying ground of a race of giants. Here were the richest of all the rich placer diggings of the golden era; and the miners, not content with looting the land of its gold, robbed it of its soil as well. Just outside the town is an eminence perhaps a hundred yards square and half a hundred feet in height, on top of which stands the old Catholic Church with its graveyard. Being consecrated ground, it escaped the ravages of the miners, although it is said to be honeycombed with tunnels, driven by ghouls under cover of darkness, and that even the graves of the dead have been looted of their gold.

Columbia—"The City That Was"

It was just high noon when we entered Columbia, the city that was. Here, almost overnight, a city of boards and canvas sprang up. Forty thousand people once lived here, all dependent directly or indirectly on the mines. At one time Columbia received serious consideration by the legislature as the proposed state capital. The original town was almost entirely destroyed by fire in 1858, but was rebuilt immediately on a somewhat smaller scale. An old etching, "The Burning of Columbia," can be seen in the Pioneer Room in the Golden Gate Park museum at San Francisco. Columbia claims a present-day population of about two hundred. I saw but six or eight people on the street that day.

The more substantial buildings were not destroyed in the great fire and still stand. Among them is the first bank to be established by D. O. Mills, now shuttered and deserted. Here also is the Wells Fargo express office, through which more gold was forwarded than through any other branch operated by the company. The office was discontinued a few years ago on account of lack of business.

We left the deserted streets of the dying town behind us and passed through a rolling country of orchards and alfalfa fields. For Tuolumne's soil is as productive as ever, though now its products must be brought forth by the sun and the rain, rather than by the sluice box and the giant.

A signpost informed us that we had arrived in Tuttletown. Tuttletown!—perhaps of all the old ruins this one is the most impressive. Here Bret Harte lived and taught school. Here Mark

(Continued on page 26)



All that is habitable of Tuttletown

SPEED ESSENTIAL TO CITY GROWTH

Properly Regulated, Fast-Moving Motor Cars Provide Greatest Safety

By WILLIAM ULLMAN

(Copyright, 1922, by the Ullman Feature Service)

IN THE superiority of regulated speed, the city has the greatest guarantee of growth.

Sounds fanciful, doesn't it?

The initial reaction to any exposition on thousands of automobiles crowding upon one another would be that traffic would have to be slowed up to meet this congestion. The needs of the individual would have to be sacrificed to the safety of the greatest number.

Experience has shown just the opposite to be the case. Speed, properly regulated, not only provides the greatest safety for the largest numbers, but also offers the only solution as to how the growing city can continue to grow and meet the problems such growth presents on the crowded thoroughfares.

Standing with Dr. John Harriss, New York's traffic commissioner, in his spacious office overlooking Fifth Avenue late one February afternoon, I watched the practical application of this theory. Dusk was already settling upon the thoroughfare of endless illumination. The signal towers, directing traffic, stationed at intervals of about eight blocks, were already adapted to night time. The countless lights of automobiles passed up and down with the traffic signal, shining at that great distance below like so many fireflies.

Suddenly the north-and-south movement ceased. Automobiles traveling with the avenue came to a standstill or pursued their course only to the next corner, to be bunched with a dozen or more other machines in a motionless group.

The traffic signals had been changed. As if some magic wand had been waved an unending string of machines swarmed from the side streets, pursuing a course from east to west or the reverse, or else turning around Fifth Avenue to become a nameless entity in the swirling masses.

The significant part of the whole orderly procedure lay in the fact that not the slightest effort was made to curb the speed at which these machines traveled. Except where the bunching of traffic necessitated a slowing down they were allowed to proceed, the drivers acting as their own mentors in the matter of speed without the slightest interference from the traffic policemen.

It was then that Dr. Harriss outlined his theory.

"There is no sound argument why machines should not be allowed to

travel quickly when traffic is well regulated," he contended. "If there is a tendency to congestion it can best be relieved by getting the vehicles out of the way as rapidly as possible. The one argument against speed is the risk of life and limb, mainly to pedestrians.

"Systematize the traffic of pedestrians and you eliminate that risk. Of course, there are selfish pedestrians, just as there are selfish drivers who will try to grab the whole game by defying all regulations. That is the one thing the traffic policeman has to watch out for constantly and it is the bane of his existence.

"The majority of citizens, however, have an appreciation of traffic regulations. They realize that they have been formulated as a means of safety for the majority. With this as an understood axiom we can give the motorist the freedom of the avenue, dictated by some instinct of common sense, and let him go as fast as the traffic will permit. In New York this plan is working out excellently. We handle traffic during the rush hour with a minimum of confusion and delay."

In every city the first pangs of overdevelopment are evidenced at the start in crowded streets. For primal conditions a traffic policeman or signal tower at the main intersection and a clear understanding of signals will suffice. After the city has passed that stage the problem becomes more complex.

Immediately the emergency becomes apparent, dozens of plans will be presented, sponsored by various organizations. Sometimes these plans are fostered by civic interest and other times by shrewd business considerations.

From the many conflicting claims set forth the commissioner of public safety, the traffic commissioner, chief of police, or whoever has charge of this particular problem, will have to find a feasible, working plan. Sometimes the emergency is overstated.

When Fifth Avenue evidenced the initial symptoms of overcrowding it was immediately prophesied that the thoroughfare was doomed to one-way traffic. The signal towers were installed to regulate it, but prior to the actual completion of details traffic both north and south was permitted.

Notice what followed. Merchants on both sides of the avenue came to

the traffic commissioner protesting the injury that would be done their business if the traffic ran only one way—opposite to the side on which they were located. Their claims were sufficiently logical to warrant serious consideration.

In the meantime, however, the two-way signal tower system was giving such general satisfaction that even the proponents of the one-way plan were compelled to concede that they were ahead of their time. Some day, perhaps, Fifth Avenue will be a one-way thoroughfare; but for the present it is functioning quite well from both inlets.

Not so successful has been the maintenance of two-way traffic on the side streets, and most of these, around the theatrical center, where 200,000 people congregate every night, are confined to one-way traffic during those hours. Broadway is still one-way traffic at certain hours.

It may be inconvenient to the individual who wants to go to the Capitol Theater from Fifth Avenue and Forty-eighth street—a distance of five blocks—to find he has to travel about a mile and a half. It is infinitely better, however, than being tied up in a jam in one of the side streets for more than half an hour while chauffeurs are decorating the atmosphere with voluble exclamations and trying to untangle themselves from a hopeless snare without the slightest regard for what may happen to the man behind.

The traffic towers on Fifth Avenue are typical of those being installed all over the country. They stand 12 feet high—tall enough to be seen at a distance of a mile or from any side street. The mob of machines is regulated by three lights—yellow, green and red. One gives the sanction for north and south bound traffic to proceed and is held for 90 seconds. Then there is just an intermediate flash, warning of the impending change. Immediately afterwards the third light is flashed on for east and west bound vehicles. This is held for 40 seconds, whereupon the whole procedure starts over again.

To regulate traffic in New York City, Dr. Harriss has a police force of 1,250, which includes 155 motorcycle traffic cops and some mounted men and bicycle policemen.

For all present needs the traffic in New York, everything considered, runs as smoothly as if the *deus ex machina* had greased the wheels with lubricant

(Continued on page 34)

The Traffic of Life

By VONARD FRASER

*Through the forest aisles to the silver sea,
To the crest of the sun-kissed hills,
As the motor sings on the Open Road
And the heart of all nature thrills.*

*There's a subtle lure in the summer air,
Wherever the road may lead,
And a power that throbs with the pulsing gears—
What a joy in the Age of Speed!*

*There's a pleasure here that our fathers knew
At the pull of the dappled greys,
Or the Roman lord with his Arab steed
As he basked in the public gaze.*

*From the snow-clad peaks of the Siskiyou
To the warmth of the southern sun,
Over roads that wind through the marts of trade,
Does the traffic of pleasure run.*

*And we laugh at Time as the tardy Hours
In their gallop from Day's red dawn
Are outdistanced far in the swift-spiced race
By this product of brain and brawn.*

*It's the key to health and a newer life,
Where the treasures of Nature lie,
As the seasons pass from the Spring's sweet breath
To the chill of the Winter's sigh.*

*And the dream of man is a broader dream
With the span of his life's increase,
And the throbbing pulse of the motor car
Bears him nearer the haunts of Peace.*

*And the country calls to the city-bred,
"Come away from the fields of strife,
For a breath of air from the snow-clad peaks
In the traffic of Joy is Life."*

MILADY MOTORIST

By EDITH M. GARFIELD



Three little maids—no, not from school, but evidently just coming from a good round of golf. And they're dressed like three of a kind. The sweater on the extreme left is a mohair slip-on in plaid effect on a white background, and the scarf is to match. The girl in the middle is wearing an alpaca-and-silk coat sweater, also with a scarf to match. On the extreme right the tailored miss is wearing a mannish coat sweater of cashmere. (All Models from Abercrombie & Fitch, New York.)



Ready to throw off her gay bathing cape of bright-colored ratine, and plunge in. Her bathing suit is worsted with contrasting borders.

very next minute's style, she pauses and casts a rather pitying glance on her less fortunate mate, who—alas!—is bound by the bars of convention to dress just like his fellow men just when they do. For years men have changed to straw hats of a most tiresome similarity in summer just as automatically and spontaneously as women powder their noses. But it is left to the more fortunate and gentler sex to change her hat as often as she changes her mind—and just how often that is has made history!

To be different! To have something that will make other women turn and stare—and copy. That is the feminine aim; but it is obvious that just as soon as other women have copied her gown, her hat, her mode of dressing her hair—that's the logical moment for the originator to discard the fashion. For although the Colonel's Lady may set the styles for Judy O'Grady, it's human nature for the Colonel's Lady to discard the aforementioned styles just as soon as Judy O'Grady appears in them.

It's not very often that a garment has the unheard-of run of popularity that the sweater has. For the past four or five years the sweater has struck the keynote in sport styles, and even now



Ideal for hot-weather tennis. Smocked dress of imported checked gingham, with smart little collar and cuffs of white.

it shows no signs of leaving the center of the stage. And why should it? As long as it solves the problem of attractive raiment for strenuous sports,

(Continued on page 36)

WITH Woman, changing her apparel and appearance is sixth sense, and Seventh Heaven! And it's a fact that sometimes in her flurry and hustle to adorn herself in the

With the Organized Motorists



President George S. Forderer of the California State Automobile Association addressing department heads and district branch managers at their annual meeting

California State Automobile Association to Hold Annual Meeting

The annual meeting of the California State Automobile Association will be held at the Whitcomb Hotel, San Francisco, Saturday, October 21, 1922. The meeting will convene at 2 p. m., with President George S. Forderer presiding. The reports of officers will first be made, after which the 1923 Board of Directors will be elected. A general discussion of the work of the club and the announcement of plans for another year will be other features of the meeting. The Nominating Committee has proposed the following to constitute the 1923 Board of Directors:

George S. Forderer, San Francisco; Percy E. Towne, San Francisco; Truman G. Hart, Fresno; P. J. Walker, Oakland; Burton A. Towne, Lodi; W. T. Sesnon, San Francisco; Arthur H. Breed, Oakland; H. R. Basford, San Francisco; John R. Graham, Merced; D. H. Lafferty, Santa Rosa; Frank A. Cressey, Jr., Modesto; Edwin F. Merry, San Francisco; Frank B. McKevitt, Sacramento; W. S. Clayton, San Jose; Francis Carr, Redding; Milton H. Esberg, San Francisco; H. J. Brunnier, San Francisco; Arthur Hebborn, Salinas; William T. Jeter, Santa Cruz; Thomas W. Hine, Eureka; Irving H. Kahn, Oakland.

New District Office Opened by Association

The new Marysville District Office of the California State Automobile Association will be at the service of motorists on September 1, 1922, with L. E. Cutler in charge

as District Manager. The new office is located at 420 Second Street, Marysville. Through this office the Association will serve its members in Yuba, Sutter, Colusa, Nevada and Sierra counties. This is the twelfth district office now maintained by the California State Automobile Association in Northern California, in addition to seven Touring Bureaus. The Marysville office will not only bring all of the services of the Association to members in this territory but will provide another point of contact for the touring member.

Annual Conference of Department Heads

Department heads and the twelve District Managers of the California State Automobile Association held their annual conference at the Hotel Richelieu, San Francisco, August 18-19. The two days were devoted to the discussion of administrative problems, enlarged and new services and policies. President George S. Forderer presided at the meeting. At this annual conference the District Managers presented to Secretary-Manager D. E. Watkins and his assistants the needs and problems of their respective districts in order that the Association may have a composite view of the territory it serves.

Gates of Death Protested by C. S. A. A.

The California State Automobile Association, through its president, George S. Forderer, has laid the matter of removing the Burlingame "death gates" before the Board

of Supervisors of San Mateo County. Through its Good Roads Bureau the Association has established that the south gate located on the east side of the highway is on county property. This gate is the most dangerous of the four pillars which mark the entrance to Burlingame and is the one where practically all of the accidents have occurred, as is attested by its battered condition.

These gates are within the paved portion of the roadway and are a constant menace to the motorist. Especially is this true of the gate now found to be on county property where several motorists have met their death. At the instigation of the California State Automobile Association the Board of Trustees advertised for bids to move the gates back from the roadway, but found that they were without jurisdiction over property back of the curb line. These Burlingame gates have caused several deaths and that should be sufficient reason for removing them or changing their position, according to the Association officials.

Mr. Volstead and Your Car

What Mr. Volstead can do to your automobile is now clearly defined as the result of recent court decisions, according to G. E. Sandford, general attorney of the California State Automobile Association.

In order that motorists may be familiar with the provisions and penalties of the National Prohibition Act the Legal Department of the Association has issued the following summary of the Act as interpreted by recent court decisions:

The Act has made it unlawful to transport liquor containing one-half of one per cent or more of alcohol, suitable for beverage purposes, unless authorized as provided.

It is possible to transport liquor for sacramental purposes, or liquor which was in the possession of the person prior to the passing of the Prohibition Act, by securing a permit upon the proper representations.

An automobile in the act of unlawfully transporting liquor is subject to seizure and forfeiture according to Section 26 of the Act which provides, in substance, that upon discovery by an officer of any person unlawfully transporting intoxicating liquor, it shall be his duty to seize such liquor and take possession of the automobile or vehicle and place the person in charge thereof under arrest. Our Federal courts have ruled that the vehicle unlawfully transporting liquor can only be taken at the time that the liquor is seized. In other words the automobile would not be subject to seizure if the officer should take possession of the liquor at one time and later attempt to acquire possession of the vehicle. It has also been held that an automobile found standing in the owner's garage, loaded with liquor was not subject to seizure, since it was not found in the act of transporting the liquor and that an inference to this end was not sufficient to justify such action on the part of the officer. The court further stated that it was necessary that someone should be discovered performing some act in furtherance of transportation. Such was the ruling in *U. S. vs. Slusser*, 270 Federal Report 818. In other words the case of *U. S. vs. Hydes*, 267 Federal Report 470, holds that the automobile must be found in the act of transporting the liquor or there must be positive evidence that transportation has been indulged in before the forfeiture would be held valid, and at the time of discovery the party in charge must be arrested and the automobile and liquor seized together.

Upon the seizure of an automobile for violation of the Prohibition Act the defendant, or some interested party, may put up a temporary bond in release of the machine until the date of the trial. The Act then provides that

upon conviction of the defendant the liquor shall be destroyed and, unless good cause to the contrary is shown by the owner of the machine, it shall be sold at public auction. In other words forfeiture cannot take place until conviction is had. (*U. S. vs. Burns*, 270 Federal Report 681.)

Many cases have come before our courts in which the owner of the machine was not driving at the time of the violation of the Act. In some of these instances the courts have held that a return of the machine to the owner may be had upon proper showing being made by the latter. In other words a stolen machine would not be subject to forfeiture from the owner. Such was the ruling in *Smith vs. Spencer-Dowler Co.*, 100 S. E. 651.

In all cases, however, in which the owner is justified in securing a return of his machine seized in the transportation of intoxicating liquor, the burden of proof is upon him that he had no knowledge or information that the automobile was to be used illegally, or that he, as a reasonably prudent man, could not have suspected such use being made of his vehicle. In other words he must prove to the satisfaction of the court that his automobile was not so used with his knowledge and consent and was used in excess of any authority, expressed or implied, which may have been conferred upon the party using same; or that he had no reason to foresee that the other party was going to illegally use the machine. This is in accordance with the ruling set out in *U. S. vs. W. W. Shaw Automobile Taxi Company*, 272 Federal Report 491.

We next come to the situation where a lienor's rights are concerned in the seizure of a vehicle found in the act of the unlawful transportation of liquor. Section 26 of the Prohibition Act specifically states that in such cases the lien is divorced from the property and attaches to the proceeds after sale by public auction, all fees in connection with the seizure and sale being first satisfied. Bona fide liens, according to their priorities, without the lienor having any notice that the said vehicle is being used or was to be used in violation of said Act, will then be paid. If there is any balance thereafter, the same shall go into the Treasury of the United States as miscellaneous receipts.

In all cases of this nature the court's decision in *W. S. Masters*, 264 Federal Report 260, holds that the lienor must first prove that his lien is in every way bona fide.

In the case of a conditional vendor, *U. S. vs. Kane*, 273 Federal Report 275, held that even though the subject vendor disclaimed any actual knowledge that the purchaser intended to use the automobile for illegal transportation of liquor, the circumstances, notwithstanding, were such as to put him upon inquiry as to such use, and the testimony of such vendor showed a lack of interest as to what use the automobile was to be put, together with the fact that he probably would have made the contract of sale had he known that it was to be illegally used. A forfeiture of the vehicle resulted.

In summing up, it is safe to say that the conditional vendor must not only establish his bona fide lien but must also prove that he had no knowledge nor any information which should have aroused his suspicions of the unlawful use of the automobile to entitle him to recovery from the proceeds of the sale.

A further point which has been subject to a great deal of controversy in the United States District Courts was very recently settled by the Circuit Court of Appeals in a decision holding that an automobile could be searched without a search warrant and subsequently seized if the officers had reasonable grounds to believe that the machine was being used in violation of the national prohibition law.

YOUR GARAGE

Legal Rights of Garage Man and Motorist Defined by Expert

By **GEORGE S. SANDFORD**

General Attorney, California State Automobile Association

SINCE the automobile has come into its own, the ancient livery stable has taken on a more up-to-date and modern form, and is now substituted with what we know as a Garage. The word is derived from the French language, meaning "keeping under cover," and is divided into the classes of public and private garages. We are here concerned with the public garage or repair shop.

The relation between a garage keeper or repair man and the motorist is that of bailor and bailee, and their rights and liabilities are to be determined according to such relation.

The rights of a garage keeper have been very definitely decided in our law, one of the principal ones being that of a lien which he is allowed upon a motor vehicle for storage thereof and repairs made to it.

In some states the statutes make this lien dependent upon possession of the property, and when the property is allowed to be taken away the lien is lost. Such is the rule in California. In other states, notwithstanding that the property is removed from the premises of the garage, the lien may still attach. In either case, however, the existence of the lien in no way affects the validity of the debt, and the owner is entitled to recover the agreed price for storage or repairs, or in the absence of an agreement, the reasonable value of services and material furnished. In many instances this may exceed the actual value of the automobile, and the lien on same may be of value to satisfy only a portion of the debt.

Authority to Order Repairs

There are a great many cases where repairs are ordered to an automobile by the party operating the same at the time, he having no authority to enter into such an agreement with the garage man. In such case the garage keeper should assure himself of the authority of such a party, according to *Gage vs. Callanan*, 113 N. Y. Suppl. 227, which, in substance, states that the chauffeur had no implied or apparent authority to order permanent repairs to the car, all of which was evident to the garage man, for he placed no reliance upon the word of the chauffeur, writing the owner himself for instructions. The owner ignored his letters. The court held that the garage man could not recover upon his repair bill from the owner. In other words, it resolves itself down to the simple proposition of a contract

between the garage man and the party ordering the repairs.

In the case of the person leaving the vehicle with the garage man having no authorization from the owner thereof to order repairs, he himself, and not the owner, is liable for the repairs, not by reason of any relation that he might have to the automobile, but by reason of his contracting with the repair man.

It is therefore always well to take particular care that anyone other than the owner is properly authorized to order the repairs made. It may be taken from this that in a case such as the one above cited the repair man's lien would not attach. This is not correct, as, even though an owner of a machine in no wise authorized or consented to repairs being made, the lien would attach to the property itself and is not dependent upon liability of the owner.

As to the liability of a garage keeper, the same is dependent upon the conditions surrounding the transaction, namely, if he is a bailee for hire, for which case he receives compensation, or whether he performs such service without pay, known as a gratuitous bailee. We are more interested in the former species.

The cases are numerous holding that where a garage keeper is paid for the storing of a car he is bound to furnish reasonably safe accommodations, and to use reasonable care and prudence in safe-keeping the machine. If it can be shown that any loss or injury resulted from negligence in this respect, he may be liable for damage.

The case of *Stevens vs. Stewart-Warner Speedometer Corporation*, 111 N. E. 771, states, in the absence of a statute as to his liability, he is not an insurer of the safety of an automobile. In other words, in the absence of a special statute or agreement he is only liable for injury resulting from his negligence or the negligence of his servants. Such a rule has been laid down by our courts in the case of a fire.

There are many instances where a machine, parts thereof, or property therein has been stolen from a garage during storage, and attempt has been made to hold the garage man responsible. It is well established in law that the garage owner may only be held liable where it may be shown that he failed to exercise reasonable care to protect the property stored against loss from theft, and it has even been held in

the case of *Chesley vs. Woods Motor Vehicle Co.*, 147 Ill. App. 588, that, in the absence of any showing or presumption that a porter acted as an agent of the garage owner, authorizing him to receive personal property from one keeping his automobile in the garage, the said owner would not be liable for the loss of such property which had been left with the porter.

Owner May Sue

The case is not uncommon where the repair man fails or neglects to properly repair an automobile, and delivers the machine in a condition inferior to that in which it should be. In such a case an action for damages may be maintained by the owner against the parties making the repairs. The measure of the damages has been defined by our courts, in most instances, to be the difference between the value of the machine, as it was delivered, and the value thereof had the work been properly done. Or the same may be arrived at by figuring the necessary work and materials to put the machine in proper repair.

Very often an owner will allege that an automobile has been damaged while the same was in the custody of the garage man for storage or repairs. There is no question that in such a case the garage man would be liable for such damage, if the same resulted from negligence on the part of himself or his employees. The courts, however, are somewhat in divergence of opinion as to who should carry the burden of proving negligence or lack of negligence.

It is a common practice for repair of garage men to find reason to operate cars upon the highway either for the purpose of testing same after repairs or in the act of delivering a car to an owner. In the former case the repair man will be liable for the acts of negligence on the part of his employees for injury resulting to the car. In the latter case if the owner enters into an agreement with the garage man to deliver his car at his residence or place of business whenever he may request, the garage man furnishing the chauffeur, he will be liable for any damage occasioned to the machine while in the act of delivering the car as a direct result of negligence on the part of himself or his employees. Of course, it is needless to say that the parties may enter into an agreement in which the garage man will be relieved of such liability, which is often the case.

LOOKING BACKWARD

The Tragedies of Early Motoring

By VONARD FRASER

HISTORY is always flavored with romance if you know where to look for it. It pops out from behind a mass of crude fact and bobs up when least expected. The old adage that "distance lends enchantment" has something to do with it, too. Yet there is a peculiar interest when we look back on the early days in the automobile industry as most of us who own and drive cars nowadays recall in personal experience some of the tragedies of early motoring that Time has tempered into Comedy.

No other industry in history has advanced with the rapidity of the motor car industry, and it only requires a memory that reaches back a score of years to recollect the day when the motor car was a curiosity and looked on as a freak hobby of a favored few.

Twenty years ago there were thirty men building motor cars in the United States. Ten years ago there were two hundred. Now their number is legion. The year's output two decades ago was only 600 cars and ten years ago it was 114,891. Such has been the rapidity of the advance in manufacturing.

During the major portion of the nineteenth century English engineers were dabbling with steam vehicles, but they met with great opposition at every hand and legislation almost put them out of business. In 1865 England passed a law that three drivers should be required on every motor vehicle, that a man must walk on in advance a few hundred yards and wave a red flag, and the speed limit was set at four miles an hour.

How the cartoonists reveled in the troubles of motoring in the early days! No trip, no matter how short, was complete without a tire change, for tires were not as infallible in those times as they are today. No windshields, no curtains, no closed bars, no self-starters, no jacks, no extra wheels—no wonder the funny men found ample material in the motor car to amuse the public. It was always a theme for fun. When the family climbed into the antiquated flivver of old, they were bundled up beyond recognition. Papa, at the wheel, donned his duster and heavy goggles, and Mama and Mary and Tom sat behind in the tonneau, stiff and straight and uncomfortable, martyrs to the new "fad."

One popular motor bicycle, as they were called then, possessed a gasoline engine in the forepart of the car, while

in back every available space was filled with a conglomeration of batteries to store the motive power for the journey. If the family wished to enjoy a ride in the evening, father got up early in the morning and started the engine, and when the shades of evening began to fall the batteries were all charged up for a voyage around the block a couple of times. Those were the happy days!

A Case of Perfume

How those old busses used to crank! And how! and, with the terrible exhaust, asphyxiate all who unwittingly crossed their path. In the year 1897 some bright inventor devised a scheme for overcoming the obnoxious odors of the motor car by attaching thereto a syringe that sprayed a perfume in the air. Lord Anglesey of England was the distinguished inventor and when he went a-motoring it was "What'll you have, violet or rose?" and forthwith the air was redolent with a fragrant mixture.

One of the pet themes of the comic artists was the dismay with which poor Old Dobbin saw the invasion of his domain. Yet it remained for California to produce the first authenticated story of the decease of a horse due to the terrifying sight of an automobile. It happened at Corning, Tehama County. The motor car was encountered on one of the streets of the city and the horse showed symptoms of fright. The driver of the animal got out and seized hold of the bit in an endeavor to quiet it. The motor car was started again and, sputtering and smoking, drew closer. The horse reared twice and fell dead.

Any driver of a motor car who proceeded at a pace in excess of ten miles an hour on the country roads was considered a "scorcher" and dubbed a "law-defying motorist." In July of 1896 one of the American journals devoted to the advancement of the automobile industry published a long editorial on the evils of scorching and pleaded for moderate speed, five miles in town limits and ten miles on the road, and pointed to the signs of the times in the organization of a "pedestrians' protection league" organized in London to protect the pedestrian against the law-defying motorist.

"The automobile today is the rich man's amusement. But because it is the rich man's amusement today it will be everybody's convenience a few years from now," writes a prophetic individual in 1898.

The early speed test was fraught with grief. Roads were not the best in character, and between boiling and freezing the poor engine had a hard time. Perhaps the race that really placed the motor car on a plane of actual worth was the contest held on June 11, 1895, between Paris and Bordeaux, a distance of 726 miles. The winning car averaged fifteen miles an hour! All the seventeen cars that were entered carried a regular blacksmith shop along with them and enough parts to rebuild the car if it proved necessary on the road. A writer in a Paris newspaper in commenting on the race declared that the boulevard throughout its entire distance was literally paved with stray parts, bolts and screws and parts of wheels. The way of the pioneer in the racing game was not all roses.

The early writers were hard pressed to find a name to bestow on the new invention. An Eastern magazine offered a prize for the most applicable term and it was awarded to the person who sent in the word "Motorcycle." For a number of years the motor car was known by this term. "Horseless carriage" was the earlier expression and "Automobile" was objected to on the ground that it was a French word.

The chief objection to the "motorcycle," according to one of the bicycle journals, is that it eliminates the personal element to too great a degree.

"Bicycle riders do not anticipate any great development from it," the writer goes on. "The cyclist will not take kindly to a vehicle where you sit idly in the seat and let the motor do the work." How lazy we have grown to be nowadays!

The automobile was not looked on as a real competitor of the bicycle. It was considered more of a substitute for the street car or railroad. In the *Cosmopolitan* of 1896, we find: "The horseless carriage promises by its cheapness of operation to give a vehicle which can be brought to the curb of the street to receive or discharge passengers. It thus promises to do away with the jerky, overcrowded cable and electric cars." And here we have the prophecy of the jitney bus of today!

Fifteen miles an hour was a terrific speed in those slow-moving days. The attitude of the general public toward the "scorching" tactics of many of the motorists is reflected in an article in *Blackwood's*, which states editorially: "We do not want a speed of fifteen miles per hour on our roads for ordinary

traffic, but the accomplishment of this great pace in a recent race shows the possibilities of the motor car."

Just as the old-time theater programs recall to us the favorites of days gone by, so do the early catalogues of the motor car industry tell an interesting story. The Duryea was the first of the American products to meet with success. Its victory in the Chicago race led P. T. Barnum to add it to his list of attractions in "The Greatest Show on Earth" and it appeared in all the circus street parades held throughout the country in 1896 and 1897. And it was a "star performer," for it took precedence in interest over Jumbo, the big elephant, and the world-famous freaks of the nineties.

A "Press Notice"

Here's the press agent notice of 1896 in regard to the "latest in motor cars":

"The Duryea motor employs gasoline as fuel. It has two parallel cylinders with pistons balanced 180 degrees apart, and so arranged that one operates independently in case of accident to the other.

"These cylinders are at right angles to the longitudinal axis of the wagon, and drive a main shaft running lengthwise of the wagon. On one end of the shaft is mounted a beveled gear and fly wheel. The beveled gear communicates motion to a shaft at right angles to the main one, on which are three friction clutches of different diameter, giving variable speeds of four, eight, twelve and sixteen miles an hour when brought into engagement.

"The second shaft is connected to a driving shaft by means of spur gears, and on this driving shaft is a sprocket wheel, which in turn communicates the motion by a sprocket and chain to a wheel on the rear axis.

"A 'jack in the box,' or epicycloidal gear, is employed to regulate the wheels in turning.

"No carburetor is used but simply one admission air valve.

"In starting the motor, a few charges of gas are pumped into the mixing chamber by means of the hand pump; then a few turns of the crank at the end of the cross shaft at the side of the wagon sets the machinery in motion.

"The new model, just completed, shows a number of new features.

"The frame work is of angle steel. The vehicle is built low, and the reach or distance between the axles is greater, giving greater stability.

"Other changes noticeable are the

2½-inch pneumatics, instead of the 2-inch, the curved lines in the seat, which are in pleasing harmony with the curved dash, and the excellent springs, which, supplementing the pneumatics, make riding very easy.

"The power of the motor has also been increased, but in other respects the features of this wagon remain the same. It will soon be exhibited in New York."

This is briefer than some of the publicity material turned out nowadays, but the same general ideas are there.

One of the greatest objections brought up by the opponents of the horseless carriage was the danger of fire from the promiscuous use of oils. One editor remarks:

"The prospect of extended storage of oil is a source of danger and the possibilities of a conflagration therefrom are great."

We wonder in reading the comment what the editor might have thought could he have but looked forward twenty-five years and viewed the tremendous consumption of oil in this day and age and realized that the great increase in the use of this inflammable substance has not been attended by a proportionate increase in fire risk.

Tires and Comfort

The idea in the nineties was that the larger the tire the more comfortable the riding qualities of the car. Wheels were still about the same size as the buggy type and even as late as 1905 we find a 37 x 7 inch casing common. But prices advanced on tires and the inventors turned their attention to the springs and now we have adopted a middle course in the way of tire sizes. Twenty-five years ago the tendency to big casings started and we find one motorist writing:

"Without the rubber tire the motor vehicle would not be practicable in the present condition of our roads. The tendency toward the use of larger tires, both solid and pneumatic, is in the right direction. The motor vehicle requires an ample cushion to equalize the inequalities of the road, relieve the machinery from shock and jar, and make riding easy and comfortable."

How would you like the job of changing three or four of those big, clumsy old tires on a hot midsummer's day? Yet the motorist of a generation ago was accustomed to this even when he essayed a short tour.

A great fear in the mind of the pedes-

trian in the early days of the motor car industry was that "one of those pesky contraptions might explode," and one indignant citizen penned a protest to the city fathers urging that steps be taken to halt the use of these "infernal machines" with their danger to life and limb. "No wagon which is likely to explode," writes he, "should be allowed on the city streets." And many a city council thought so, too, for we find town after town passing ordinances prohibiting the use of motor vehicles on the streets of the city.

In those days twenty miles an hour was a terrible rate. The editor of the pioneer motor car publication, *Horseless Age*, remarked editorially in 1896: "A speed of ten to twelve miles an hour is all that is required."

"The gasoline propelled vehicle will never be practical," declared an engineer as late as 1897.

"In the first place a vehicle that carries eight to ten gallons of inflammable gasoline is unsafe. Would you be permitted to store such an amount of gasoline in a barn or stable without forfeiting your insurance; and would not the general introduction and handling of such vehicles, by inexperienced persons, result in a loss of life and destruction of property? Can a vehicle using such a fuel be considered to have general utility and adaptability?

"Second, a vehicle that must make a continuous puffing noise, due to the exhaust from the motor, is not only disagreeable but to some persons alarming.

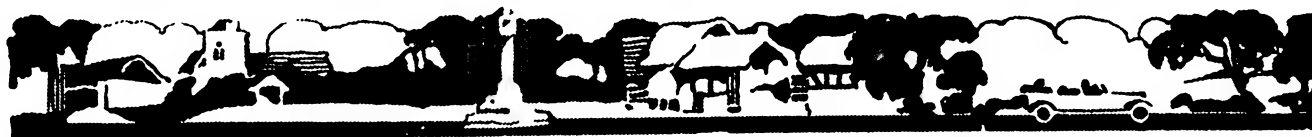
Jar and Vibration

"Due to the explosive force of gas or vapor in a cylinder, there is a constant jarring and vibration and this is most disagreeable.

"The constant ignition and explosion of the gasoline raises the temperature of the cylinders to such a point on a long run as to prevent lubrication and endanger the successful operation of the motor. To prevent this, water circulation is necessary and very often this is not sufficient, and ice in quantity has to be carried in order to keep the cylinder cool enough to allow the motor to perform its normal work.

"All the gasoline motors belch forth from their exhaust pipe a continuous stream of partially unconsumed hydrocarbon in the form of a thin smoke of a highly noxious odor. Imagine thousands of such vehicles on the streets,

(Continued on page 34)



TRENDS IN TRANSPORTATION

Wherein an Expert Discusses Problems of the Industry

By ALFRED REEVES

General Manager, National Automobile Chamber of Commerce

IN THE swift development of the machine age, which within a hundred years placed immense power over time and distance in the hands of man, one of the most far-reaching inventions has been that of the automobile. Within twenty years this product so completely has integrated itself in American life, so rapidly has met public demand for individual transportation, that the facts of motor vehicle usage have anticipated all but the most advanced theorists.

For years there have been prophets who could demonstrate on paper that the industry had reached its limit and that the country was buying more cars than it could possibly support. These men reached conclusions of that nature because they had in their minds the early vehicles which were the toys of sportsmen and because they were unable to see the ramifications and creative importance of motor transportation, even as the prophets of earlier days laughed at Fulton's steamboat.

1921 Proved Motor Need

Last year was a trying year to everybody in every business and the automobile industry was no exception. However, 1921 was fortunate for the motor world in this particular, that it showed once for all how completely motor transportation is interwoven with the social and economic structure. In the year of 1921 there were fewer new cars bought than usual, but there were more cars running on the roads than there ever had been before. There was more gasoline consumed than ever before. In the hardest times that we have known in some years, motor transportation was in greatest demand.

To those who appreciate the part played by motor vehicles, this fact is not surprising. Over one-third of the motor vehicles are owned on farms, hundreds of thousands are used by business houses and individual salesmen. In times of stress there is a tendency to work harder; and the machinery which helps to create values, accordingly, is exercised more.

Improvement Assures Markets

As soon as general business began to improve, the latent demand for new cars immediately manifested itself with

the result that the past few months have witnessed the largest production on record.

The automobile is usually one of the earliest lines of business to recover from a depression and in 1921 and 1922 this recovery was augmented by the reduction of prices directly to the consumer so that today the buyer can get more car value for his money than has ever been the case before. The farmer, who has been compelled to take readjusted prices for his products, has been quick to see that the automobile market has also been radically readjusted in the past eighteen months. The remainder of the public have also been well aware of these values and have been active purchasers.

Production of 2,000,000 for 1922

The industry, however, is conservative in its view of the total production for the year. It is safe to say that the 1922 output will run close to 2,000,000 cars and trucks, second only to the best year of 1920, when there was a large unsatisfied demand left over from war years. The total for this year will be much better than 1921, when 1,668,000 motor vehicles were manufactured. If, as we estimate, there passes out in 1923 the number of cars approximately equal to the total made five or six years previously, then next year we shall have to replace the number made in 1917, which was 1,868,000, in addition to the market created by the demands for new owners.

In 1922, with the upward curve in all lines of business, there should be a good market for motor vehicles in all parts of the country and particularly in the agricultural districts.

In those sections where roads are improved, there will be a greatly increasing demand for closed jobs, more particularly those of the so-called utility type, although there will also be a growing market for the more

handsomely fitted sedans and limousines. The closed car has been developing from the point where it was about ten per cent of the business two or three years ago, to the market of 1922 where nearly a quarter of the cars sold have closed bodies.

The general trend of the industry is toward increased production of cars of the small type which supply transportation at the lowest possible cost. There will, of course, always be a large market for cars of the better grade to supply those buyers who want and who can afford the best that there is in motor transportation.

The supposition of some that the business will be eventually divided among a very small number of companies is extremely doubtful because the American buyer wants individuality. There will always be a large number of companies appealing to varying personal tastes.

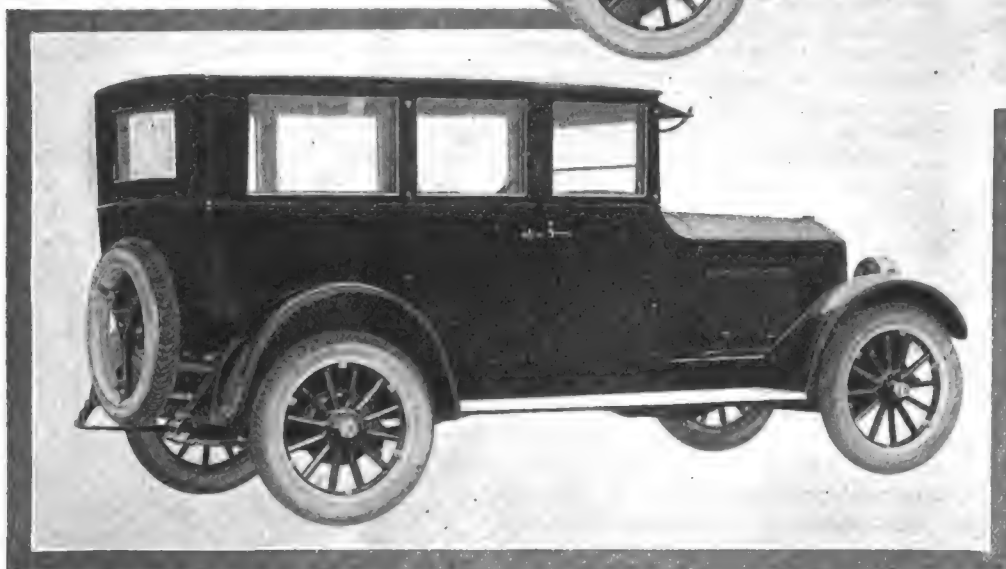
Not every one wants a four-cylinder motor, or a six or an eight. Some want touring cars and others want closed cars. Not a few insist on magneto as regular equipment while others prefer battery. We have proponents of steam and gasoline, supporters of air-cooled as well as water-cooled cars and differences of opinion on a great many other construction features of motor vehicles.

The two things which menace the automobile industry from within are poor service and over-trading of second-hand cars. The former is getting better every day, but the latter is very far from being solved. No one expects to see the time when there will not be trading in second-hand cars. The real task is to get the problem on a basis that will be fair to the public and fair to the automobile merchant.



A Pair of New Buds

The new Jewett models—a roadster designed primarily for the salesman, and a handsome sedan—have been added to the Paige Company line. Bodies are mounted on the standard Jewett chassis. The sedan, upholstered in blue sedan cloth, is motored with a $3\frac{1}{4} \times 5$ Paige-built motor, delivering 50 horsepower at moderately low engine speed.



LAUGH WITH THE AUTO BUYERS

Matter of Form

CLANCY—Oi want to get a firshst-class ottymobile for me wife.

AUTO DEALER—Long body?

CLANCY—Begorra, no! She's built like a barrel—but pwhat's that got to do with it? —*Boston Transcript.*

* * *

Futurity Spender

"Buying an automobile on the installment plan is a terrible strain," remarked the impecunious citizen.

"It certainly is. How many installments have you paid on your car?"

"The first one is due tomorrow."

—*Birmingham Age-Herald.*

* * *

Farewell Model

AUTO SALESMAN (to customer of month previous)—That car is a good buy for you!

UNLUCKY DRIVER (with sarcasm)—Not for me. It's a bye-bye to my bank account.

—"Topics of the Day" Films.

* * *

Sure Cure

BROWN—I'm the most forgetful man in the world.

BLACK—Why don't you buy a flivver?

BROWN—What for?

BLACK—That will jog your memory.

—*Portland (Me.) Express.*

Big Order

IRATE CUSTOMER—I bought a car of you several weeks ago, and you said that if anything went wrong you'd supply the broken parts.

DEALER—Yes?

IRATE CUSTOMER—I'd like to get a nose, a shoulder blade, and a big toe, then.

—*Gargoyle (University of Michigan).*

* * *

Preliminary

RAY—So your husband refused to buy you an automobile?

MAY—Not exactly refused; he said I ought first to become familiar with machinery in general. So he bought me a sewing machine. —"Topics of the Day" Films.

* * *

Change of Change

BROWN—Since I bought a car I don't have to walk to the bank to make my deposits.

BLACK—Ah, you ride there?

BROWN—No, I don't make any.

—*Portland (Me.) Express.*

* * *

Likes Fairy Tales

"You sold me a car about two weeks ago?"

"How do you like it?"

"I want you to tell me everything you said about that car all over again. I'm getting discouraged."

—*Birmingham Age-Herald.*

PAIGE



A Five Year Car

Next to the gratification and pride in owning the car that daily proves itself Master of the Highway is the keen satisfaction of knowing that your Paige 6-66 is a car of long life.

You know it will be just as eager and alert to challenge the best on the road five years from the day you bought it as it was the first time you took the wheel.

That was the real end and aim of Paige engineers in designing the 6-66 chassis. The mighty engine of 70 horse power, that demonstrated its possibilities of performance when the Daytona Model broke every world's stock chassis speedway record from five to 100 miles,

is an economic factor of prime importance.

No Paige owner is ever likely to call upon this engine for its full capacity. The records that prove its sensational performing powers he regards as a guarantee of extraordinary endurance. They mean that daily service will never call for more than 50 percent of the car's full capacity.

Consequently when the Paige 6-66 ambles along at 40 miles an hour there is an even-flowing, vibrationless delivery of power. The 6-66 is never overstrained or unduly taxed. Long life and uninterrupted service are the logical results.

Some very desirable territory is available for the dealer who can take full advantage of a Paige and Jewett franchise. Write or wire.

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THE MOST BEAUTIFUL CAR IN AMERICA

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THE LAND OF YESTERDAY

(Continued from page 14)

Twain lingered awhile and collected much of his material for "Roughing It." Here lived Jim Gillis, alleged prototype of Truthful James.

We stopped beneath the dense shade of a great tree before the old hotel, now a shambling ruin. A scant half dozen decaying old buildings are all that remain of the camp that was once one of the liveliest in the Southern Mines. The old cabin in which Mark Twain once lived still stands and behind it lies Jackass Hill, perforated with abandoned shafts and caved-in tunnels.

Between Tuttletown and Angels we crossed the Stanislaus River, roaring through its deep and rocky canyon, and entered the boundaries of Calaveras County. Here we passed two famous mines, the Melones and the Carson Hill, both in operation again after many years of inactivity.

Angels Camp, like most of the other mining towns, straggles along the ravine in which gold was first discovered. Beneath its streets lie mile after mile of underground workings, for within the town limits are the Angels, the Lightner and the Utica mines, all large producers in their day. The great stamp mills are silent now, but Angels Camp patiently and confidently awaits the day they will again begin to grind out the gold from the underground treasure vaults.

Bret Harte's "Roaring Camp"

I have always pictured Angels as Bret Harte's "Roaring Camp." Harte was never definite in his localities. As far as I have been able to ascertain there never was a "Roaring Camp," or, for that matter, a "Poker Flat," a "Slumgullion" or a "Smith's Pocket." Neither was there a "Wingdam" stage. Just why he chose to conceive the names of his own geographical settings is perhaps a trifle obscure. It may be that he desired to express his talent for unique nomenclature in emulation of the sponsors of such existing settlements as Loafer Hill, Whisky Bar, Lousy Ravine, Dead Mule Gulch, Shirt Tail Canyon, Dogtown and Port Wine, but, surely, any of these or a half hundred others that actually existed might have proved equally picturesque and appropriate.

But, to resume, Angels has always been "Roaring Camp" to me. Of course the story might apply to almost any of the other mining towns, but I will always believe that it was here that Cherokee Sal presented Stumpy and Kentuck with "The Luck" and that it was the roaring torrent of

Angel's Creek on a rampage that bore "The Luck" away again. Angels experienced just such a flood about fifteen years ago, when part of its Chinatown was swept away.

We dined at the Hotel Angels, erected in 1852. Angels was the setting of many of Bret Harte's writings; "The Bell Ringer of Angels," "The Spelling Bee at Angels" and many others tell of the departed glories of the camp that was.

We remained late in Angels, roaming its cool streets with their rose-covered cottages, browsing about the old graveyard and the abandoned mines, and shortly before midnight resumed our journey eastward under the radiance of the full moon.

If there were such up-to-date time-pieces as striking clocks in Murphy's they were tolling the hour of 1 A. M. when our expedition entered the sleeping town. Not a light, not a sign of life was in evidence. Somewhere in the vague, purple darkness a dog howled; then, as though alarmed at his own audacity in breaking the heavy silence, subsided, and the stillness was more intense than ever. After considerable difficulty we succeeded in awakening mine host of the hotel, who grudgingly showed us to our rooms. The Murphy's hotel is an old brick structure, built in the early fifties. Throughout the long summer day it absorbs the sun's heat as a sponge absorbs water; and when the coolness of the mountain night drops down, the walls continue to radiate heat until daybreak. In the stuffy rooms sleep seemed impossible but finally did come through sheer exhaustion.

It was very hot at Murphy's the following morning and we lost no time in getting under way. We began our real climbing now; the foothills, with their oak and manzanita, were behind us, and we rode through the shadowy aisles of the pine forests. The air grew cooler and lighter as we ascended, for as we arrived at the Calaveras Big Trees we had attained the elevation of 4,700 feet about the sea.

The Sierra Big Trees

Much has been written of the big trees of the Sierras. Much will yet be written. But the sublimity, the grandeur and the awe inspired by these oldest of living things can never be fully expressed. In the semi-twilight of the grove the sun filters through in straight, brilliant beams of light, illuminating the brown trunks of the giants and the floor of the forest, which is a maze of great green ferns. These are the trees that were sturdy saplings

when Christ was born at Bethlehem. Through the ages they have stood while empires rose and fell. Their boughs entwine overhead and arch to form the dome of a vast cathedral, silent, impassive and sublime. The mountain breeze that ever blows throughout the summer months produces no sound in the needles overhead. Our own footfalls are muffled by the deep brown carpet of needles that covers the ground. Even the little stream that flows through the grove courses silently and placidly on its way to join the river.

Many hundreds of people visit the Calaveras Grove every year; but above there travel is light, and for the remainder of our journey to the summit we encountered few cars. Our course lay ever upward. Each turn of the road opened up new vistas, new scenes of wild and rugged beauty. Above Silver Valley we gained our first summit and beheld for the first time the snow-clad heights of the Dardanelles looming to southward. From here the road drops rapidly down to Hermit Valley, through which roars the South Fork of the Mokelumne River. Here we made our first camp and cooked our first camp dinner, augmented by trout fresh from the stream. Hermit Valley affords an ideal camping ground; the scenery is magnificent, fishing is good and it is sufficiently inaccessible not to be overcrowded.

We discovered one of the reasons for its inaccessibility the next day when we crossed over Ebbett's Pass and descended the famous "Double S" grade on the other side, which is seven miles long and has a maximum gradient of thirty per cent. At the foot of the "Double S" we discovered with some surprise that we had landed in the desert, and rode through sagebrush for many miles to Woodfords, where the night was spent.

Following Fremont's Trail

Heading up the West Fork of the Carson River next morning, we followed close to the trail broken by Frémont in the winter of 1844. Frémont, with Kit Carson as his guide, had successfully completed an expedition from Kansas City to Oregon and was returning to the east when he ran out of provisions on the Nevada Desert. He was forced to face about and attempt the well-nigh impossible feat of crossing the Sierra Nevada in the dead of winter. Something of the perils, the hardships and the privations experienced by the little band of pathfinders he describes in his memoirs:



Favored by Women

THE woman who drives has a natural preference for tires that are puncture-proof.

Not because she cannot change a punctured tire. Rather because it is an unwelcome task. Soiled hands, flushed face, rumpled attire are not inviting. Rightly she wishes to avoid the annoyance.

Lee Puncture-Proofs secure the full approval of the woman-driver. She has greater confidence in handling a car equipped with Lees. She appreciates, too, the economy of Lees in increased tire mileage.

Men thoughtful of the safety and comfort of their women-folk are taking the initiative in ordering for their cars Lee Puncture-Proofs—the pneumatic tires covered by a cash refund guaranty against puncture.



The Lee Line of Pneumatics is complete, including Regular Fabric and Cord as well as Puncture-Proof.

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"February 2nd [1844]. It had ceased snowing and this morning the lower air was clear and frosty; and six or seven thousand feet above, the peaks of the Sierra now and then appeared among the rolling clouds. Our Indian guide shook his head as he pointed to the icy pinnacles shooting high up into the sky and seeming almost immediately above us. The people were unusually silent, for every man knew that our enterprise was hazardous and the issue doubtful."

"Feb. 3rd. Turning our faces toward the main chain, we ascended an open hollow along a small tributary of the river."

This was undoubtedly beautiful Hope Valley and the "small tributary" the West Fork of the Carson. Here we camped for the night among the pines; and as our firelight flickered on our peaceful camp, its three cars and its tents, with the bright summer moon flooding the mountain peaks, I could not but contrast the scene with that so graphically described by Frémont:

"Feb. 4th. Tonight we had no shelter, but we made a large fire around the trunk of one of the huge pines. The night was very bright and clear, and though the thermometer was only down to ten degrees a strong wind which sprang up at sundown made it intensely cold and this was one of the bitterest nights during the journey. . . . Two Indians joined our party here, and one of them, an old man, immediately began to harangue us, saying that ourselves and animals would surely perish in the snow. . . . We now began to understand some words and, with the aid of signs, easily understood the old man's simple ideas. 'Rock upon rock, rock upon rock, snow upon snow,' said he; 'even if you get over the snow you will not be able to get down from the mountains.' He made us the sign of precipices and showed us how the feet of the horses would slip and throw them off the narrow trails which led along the sides. Seated around the tree, the fire illuminating the rocks and the tall boles of the pines round about and the old Indian haranguing, we presented a group of very serious faces."

Toward the Summit

Crossing Hope Valley next morning, we began the ascent toward the

summit. The road is well graded and the roadbed is in excellent condition; of all the roads on the eastern slopes of the Sierras the Kit Carson Pass route affords the easiest grade. Still following in Frémont's footsteps, we ascended easily in second gear where the Pathfinder "made wooden mauls and worked hard all day pounding down the snow to make a pathway for our animals."

It took Frémont fourteen days to cover the eight miles from Hope Valley to the pass, a distance that we climbed in less than an hour. He tells of his first glimpse of the western side of the mountains, viewed from a high peak:

"Far below us, dimmed by the distance, was a large, snowless valley, bounded on the western side by a low range of mountains, which Carson recognized with delight as the mountains bordering the coast. Between us, then, and this low range was the Valley of the Sacramento, and a dark line which could be traced with the glass was imagined to be the course of the river. . . . Shortly afterward we heard a roll of thunder and, looking toward the valley, found it enveloped in a thunderstorm. We watched its progress until sunset, when the sky cleared brightly and we saw a shining sheet of water directing its course toward a broader and larger sheet. We knew that these could be no other than the Sacramento and the Bay of San Francisco."

It was a feeling of reverence that we stood before the monument in Kit Carson Pass. The monument, carved from the native granite, was erected last year to commemorate the spot where stood the tree on which Carson, cutting away the bark, carved his name and the date that winter's day in 1844. Frémont's barometer had been broken before he reached the summit, a misfortune which he regretfully refers to many times in his memoirs. The topographic maps of the United States fix the elevation of the pass at 8,600 feet, while Frémont roughly determined it as nearly one thousand feet higher. He writes:

"On the afternoon of February 20th, 1844, we encamped with the animals and all the material of the camp on the summit of the Pass in the dividing ridge, one thousand miles by our travelled road from the Dalles of the Columbia. The temperature of boiling

water gave for the elevation of the encampment nine thousand three hundred and thirty-eight feet above the sea, two thousand feet higher than the south pass of the Rocky Mountains."

Pitched Camp at Twin Lakes

We dropped down from Carson Pass and camped on the grassy shore of Twin Lakes. These were formerly two separate bodies of water, but a dam erected by the power company has raised the level of the water surface and they are now connected. We passed the night here and continued on down the road next morning over the Carson Spur, past beautiful Silver Lake and through the pine forests to Jackson.

Jackson is another of the "Bret Harte towns"; same old buildings, crooked streets, belonging to another age. After leaving here romance and the golden age lay behind, and it was with a feeling of regret that we saw the rolling hills merge into the broad level valley.

For there is something about the mountain country that fascinates. The snow-capped Sierras seem to beckon you on and on to new awe-inspiring vistas just over the next summit; the great, towering pine forests surround you with their friendly, sheltering embrace. The spirit of the past still lives in the rolling hills. . . . Yuba Bill is still there, he will always be there; so will "Tennessee's Pardner" and "Miggles" and "The Duchess" and, yes, even old "Uncle Billy" (the Judas), forever condemned to drive his stolen mules over the hills. Their spirits will never leave, can never die. And far up on the Stanislaus River I am sure you will find, if you search and have faith, a great towering pine with the deuce of clubs pinned to its trunk with a bowie knife and, beneath it, the grave of that most beloved of vagabonds, John Oakhurst, gambler.

And the scent of the forest and the song of the river will bring you content, and your cares and your troubles (if you have any) will be banished as they were from the pioneers of those other days, who

" . . . in mountain solitudes, o'ertaken
As by some spell divine,
Their cares dropped from them like the
needles shaken
From out the gusty pine."





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Cadillac owners find an added source of satisfaction in the fact that they can tour almost anywhere in America and yet be ever within reach of expert Cadillac service.

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The really unusual scope and competency of the Cadillac service organization, they regard as added evidence of the permanency which makes Cadillac the notably sound motor car investment. It gives them added security in their motor car choice.

DON LEE

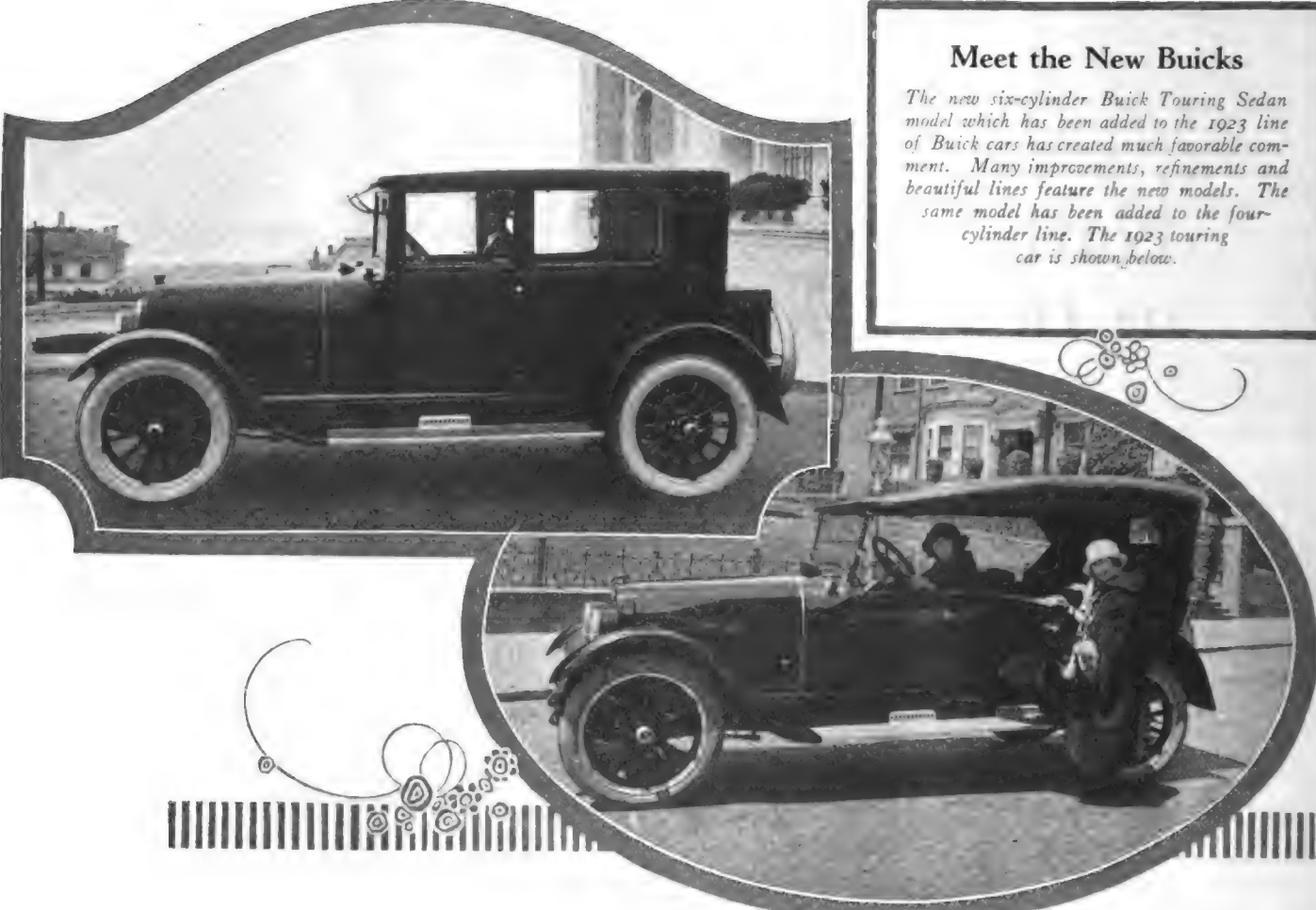
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C A D I L L A C



Standard of the World

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Meet the New Buicks

The new six-cylinder Buick Touring Sedan model which has been added to the 1923 line of Buick cars has created much favorable comment. Many improvements, refinements and beautiful lines feature the new models. The same model has been added to the four-cylinder line. The 1923 touring car is shown below.

GASOLINE STOCKS AT A GLANCE

Gasoline stocks at refineries in the United States on July 1 registered a slight decrease from the figures for the previous month, according to statistics compiled by the Bureau of Mines, which show 824,966,456 gallons on hand. This is a decline of approximately 32,000,000 gallons from the figures for June 1, reflecting the normal seasonal drop due to increased use of automobiles in the summer months.

Domestic consumption of gasoline for June was 507,000,000 gallons as compared with 499,000,000 gallons for May and 386,000,000 gallons for April. The May figure represents an increase of 41 per cent in consumption as compared with May a year ago, while a similar comparison for June shows a 14 per cent increase, a more nearly

normal figure. Stocks for June are 10 per cent in excess of June a year ago.

Production of gasoline for June amounted to 525,940,600 gallons, an increase of 12,000,000 gallons over May and 51,000,000 gallons over April.

Figures furnished the Bureau of Mines by refineries for the first six months of 1922 show an increase of 9.9 per cent in domestic production of gasoline as compared with a similar period in 1921. The increase in domestic consumption is 6.1 per cent in excess of this amount or 16 per cent.

A daily average of 1,547,000 barrels of oil was run through the stills of the 310 refineries reported as operative during the month of June. These figures show a daily increase of 30,000 barrels in the amount of oils run and a

decrease of five in the number of operating plants reporting as compared with the month of May. Plants reported during June were running an average of 88 per cent of their daily indicated capacity. In addition to the plants referred to above, it is estimated that there were probably ten plants of small total aggregate capacity operating during June from which no advices of any nature were received by the Bureau of Mines.

The output of lubricating oil for June was 80,138,257 gallons, which indicates a daily average increased production of 95,000 gallons. The seasonal demand for lubricants reduced stocks to a figure of 226,903,812 gallons on hand July 1, a decrease during the month of 39,000,000 gallons.

GROWING TENDENCY TOWARD CLOSED CARS

Closed cars are now approaching the mark of one-third of all new car sales, a situation that shows the remarkable possibilities in this field. It means that "seasons of selling" will soon be a thing of the past, as the closed car will fill in the gaps between the spring and summer trade.

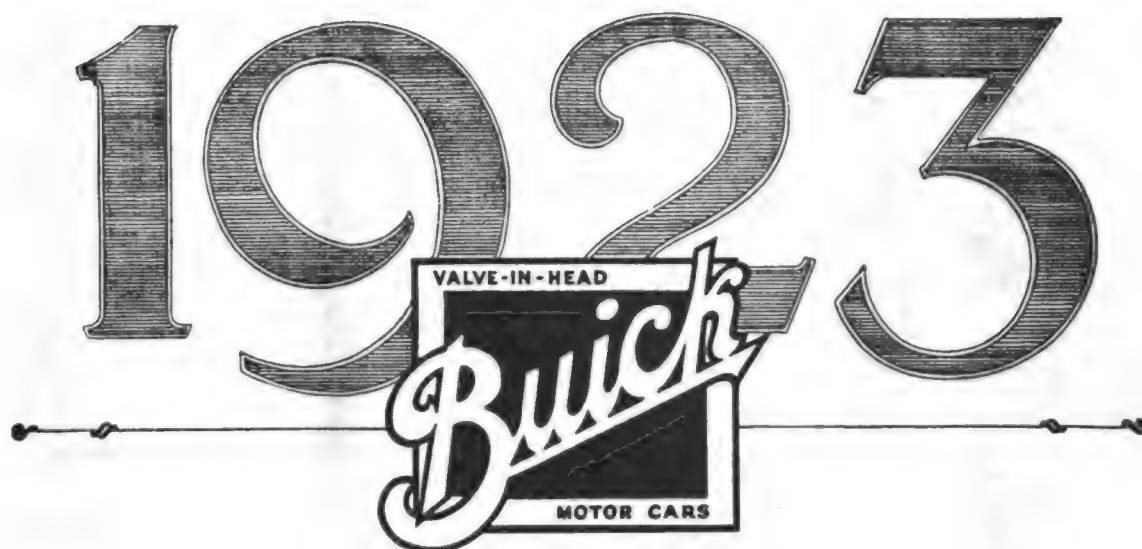
If the present increase in closed-car production keeps up it is not difficult to imagine a day when the open touring model will prove a thing of the past, just as the buyer of today looks with amazement on the era of cars without windshields and self-starters.

California has revolutionized the

whole industry in the way of coach design by evolving a light enclosed covering which is inexpensive and enables the car to be converted as the weather bids.

The East has been quick to realize the possibilities in this California product and it has met with high favor there.

Announcing Pacific Coast Prices



OPEN CAR MODELS

4-cylinder Roadster	2 passenger	\$1050
4-cylinder Touring	5 passenger	1075
6-cylinder Roadster	2 passenger	1400
6-cylinder Touring	5 passenger	1425
6-cylinder Touring	7 passenger	1690
6-cylinder Sport Roadster	3 passenger	1890
6-cylinder Sport Touring	4 passenger	1945

CLOSED CAR MODELS

4-cylinder Coupe	2 passenger	\$1385
4-cylinder Touring Sedan	5 passenger	1540
4-cylinder Sedan	5 passenger	1625
6-cylinder Coupe	4 passenger	2180
6-cylinder Touring Sedan	5 passenger	2210
6-cylinder Sedan	5 passenger	2270
6-cylinder Sedan	7 passenger	2495

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WHEN BETTER AUTOMOBILES ARE BUILT, BUICK WILL BUILD THEM

HOW TO FORESTALL THE STALL

Attending to a Few of the Units of the Electrical System Usually Overlooked

By I. M. GILBERTSON

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IT ISN'T a very pleasant sensation to be stalled on the road under any circumstances, but it's a thousand times more irritating to discover after you have been towed home that there really wasn't any excuse for your predicament. If you had just attended to this or that before you left the garage, you would not have been obliged to break your engagement and suffer the humiliation of being "towed" and of being charged a neat sum for the work.

Again, we might say that it is one thing to know that something ought to be done by way of forestalling trouble and quite another thing to know *what* ought to be done. The most inexperienced motorist has learned, sometimes through experience, that he can't get very far on a day's run without fuel for his engine, water to cool the power plant and air to inflate the tires. Some are even provident enough to keep the battery filled at all times with distilled water, to see that the fan belt is tight and to be sure that the oil indicator is registering correctly.

Many other drivers go deeper into the subject than this, but even those who are careful to see that every little thing is well greased and sufficiently tight are often inadvertently negligent of the very things which, when not attended to, result in just the sort of breakdown which every driver wants to avoid.

A Few Examples

Here are a few of them:

A large percentage of breakdowns are the result of trouble somewhere in the ignition system, and this trouble, nine times out of ten, is simply caused by a broken wire which has served its term of faithfulness. This is particularly true of the ignition wires, which, due to excessive heat from the engine and vibration, tend to deteriorate and thus cause "missing."

When two cylinders of a four or a six type of engine cease firing, the driver is pretty certain to have a difficult time trying to proceed with his trip. Because he is obliged to go into second on every grade his engine will soon overheat and cause other consequent troubles. But there is no reason to be caught with broken or bared wires, because it is easy to tell beforehand when they are due for replacement.

A crack in the rubber insulation of an ignition wire is sometimes as bad as an actual break in the wire or a faulty connection either with the distributor

head or the respective spark plug. As soon as an ignition wire is exposed somewhere along its length the high voltage current which travels along it will have a tendency to jump to the nearest "ground," which means any metal part of the engine which is in the vicinity. Usually an ignition wire comes within a spark distance of a "ground" somewhere along its length. And it is just this sidetracking of the spark to the wrong place which robs the respective cylinder of its firing element, that is, if the wire becomes exposed.

The point is, watch the ignition wires as carefully as you watch the oil in the engine. They are inexpensive and very easy to re-install when necessary.

Another great cause of trouble in the wiring system is the result of allowing the battery posts to accumulate corrosive substances. These eat into the metal and eventually eat off the end of one or both of the feed wires. When this happens a car immediately sings what seems to be its swan song. If you know where to look for the trouble and how to remedy it you will simply clean off the posts as best you can and reattach the broken wires—provided there is enough left of the posts to attach anything to.

But all of this should never be necessary if the driver would smear vaseline over the posts when the battery is new. This prevents the accumulation of corrosive substances—and is simply one of the ways of taking trouble by the forelock.

The distributor is another part of the electrical system which is always looking for an opportunity to give trouble. The head of this unit is easily removed, but because it is the sort of unit which doesn't seem to require daily pampering is just as easily neglected. The first thing to do when inspecting the distributor is to find out—from the instruction book—what type of unit is used on your car. In some distributors the rotor touches the contact points; in the newer type the rotor does not actually touch, the spark jumping a slight gap to each contact point.

Keep Points Clean

If the distributor is the former type naturally the contact points must be kept as clean as any other electrical contacts in the system. Fine emery paper or a fine file should be used for

this cleaning; and the tip of the rotor should also be brightened. The rotor track should be greased with a little vaseline applied with a clean cloth.

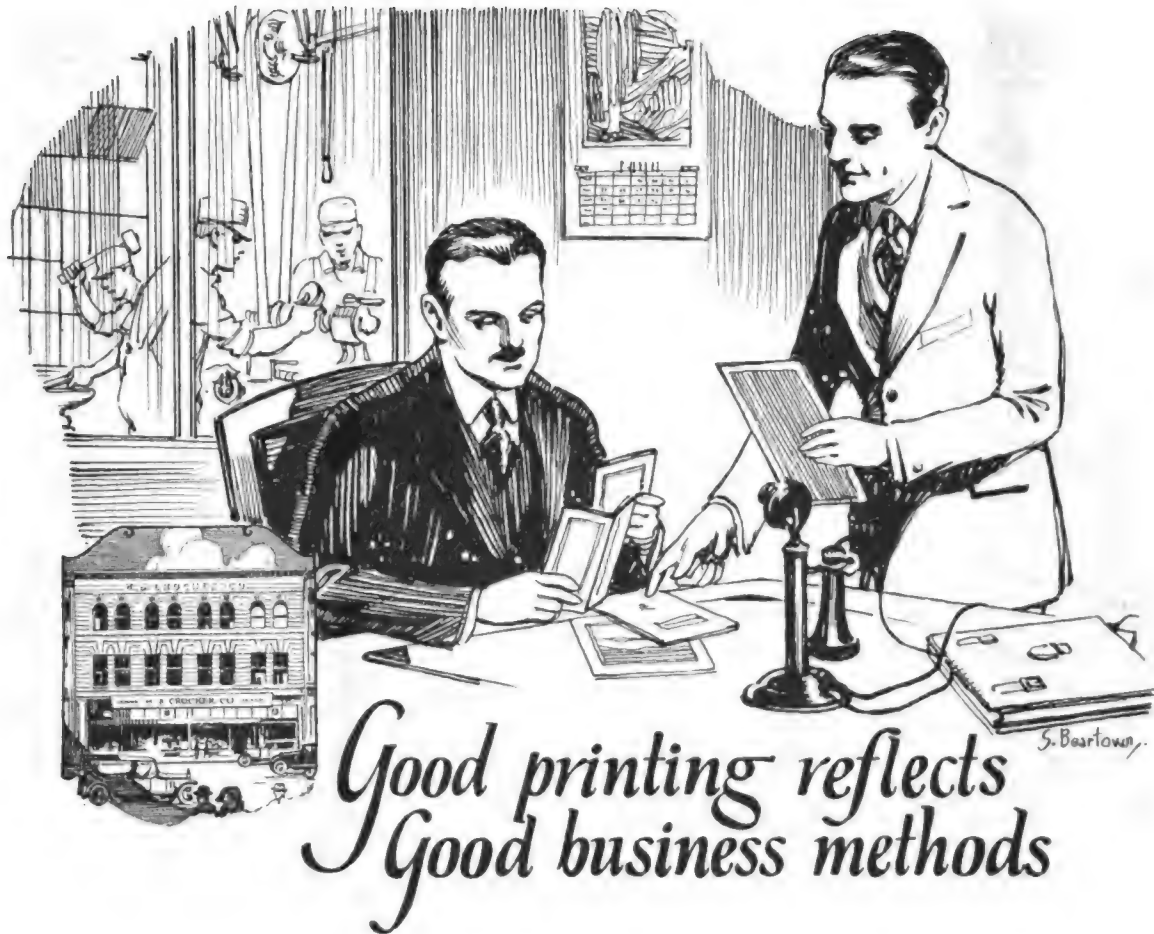
The second type of distributor does not require this attention, because the contact points will not become oxidized under ordinary circumstances. But a periodic inspection and cleaning of the inside of the distributor will be found good insurance against later trouble. Any oil or dirt which is allowed to accumulate under the head is bound to interfere with the regular functioning of the rotor and will eventually work down into the compartment containing the breaker points, where it will breed the sort of thing that calls for a repair shop.

Serious trouble often originates from loose connections at the relay, or cut-out as it is generally called. This is the electrical device which prevents the battery's current from flowing back into the generator when that unit is not charging a voltage equal to or greater than that delivered by the battery. The contact points of the cut-out are open when the car is running at about ten miles per hour or slower. At over ten miles per hour they close and form a direct contact between the generator and the battery. Should the wiring become loosely connected the cut-out might not function when the generator is delivering lower voltage than the battery, nor close and furnish the necessary outlet for generator's current when the engine is running faster. In either case the generator would be damaged and the battery would give out.

Inspect Cut-Out

The cut-out is usually attached either to the generator or to the engine side of the dash. It should be periodically inspected and the connections tightened if necessary. A few minutes spent in consideration of the cut-out may save the annoyance and expense of being stalled. In this connection it is good policy to learn as much as possible about reading the ammeter so that the intricate workings of the electrical system can be carefully watched. An ammeter that registers "discharge" when none of the switches are on is a fairly sure indication that the contact points of the cut-out are stuck together and that the battery is discharging into the generator.

A broken contact or a short circuit



The manufacturer, whether he heads a large establishment or a small shop, should be careful to see that his printed matter truly reflects the character of the work he produces. That is something that can safely be left to the Crocker organization.

The Crocker Salesman is always ready to advise and consult with you on your printing work. He knows printing in all its phases, and often he will be able to save money for you. Send for him.

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in the electrical system invariably asserts itself suddenly and without warning. If none of the fuses are blown some wire is either disconnected or broken. The suddenness of electrical

trouble differentiates it from all other car ills. If you have not given proper attention to the "juice" of the car, you can at least forestall a repair bill and the humility of being towed by looking

to the wiring of the engine the moment the motor stops suddenly. But the simpler plan—the one that forestalls the stall itself—is to look to the wiring before you take to the road.

SPEED ESSENTIAL TO CITY GROWTH

(Continued from page 15)

so that they fitted behind each other with mechanical precision. That, however, is not taking into account some of the problems the city, or any city, will have to face years hence.

One of these, according to Dr. Harriss, is the constantly growing horde of taxicabs. There are at present about 14,000 taxicabs operating in the city. Dr. Harriss advocates limiting the number from eight to ten thousand and requiring a license of from \$1,000 to \$3,000 from each one.

"When I say that a lot of grief is due to the irresponsible taxicab driver I mean no reflection upon the man in that work who is responsible. My plan is simply to protect him," he declared, during a recent interview. "At present the pedestrian who is injured by a taxicab has absolutely no recourse. He goes to court and if, as is usually the case, the driver is a poor

man the victim has no compensation to look forward to. My plan is to make this license valuable to the drivers and make it something of serious consequence if they jeopardize it by carelessness or disregard of regulations."

Another problem involves the tremendous congestion around the theatrical district every night. There is a plan to meet this that will have to be considered in time unless conditions alleviate themselves by a spreading of the district.

The plan, like other similar ones, finds its start in the crowding of so many people at one particular spot at the same time. One suggested method of relief is to have different theaters start at different hours. Have musical comedies open at nine, say; and have the curtain for dramas and other forms of stage entertainment at eight or quarter past.

One of the greatest benefits that have been conferred by the installation of the signal towers on Fifth Avenue has been the clear line of demarcation that has been established by uptown and downtown traffic. No longer do machines zigzag in and out of course, like a stormy petrel trying to head off a competitor. They know their bounds because they are being clearly defined; and keep to them.

When one realizes that the greatest number of accidents have been caused by aimless driving in the past, it is easy to understand why this is pointed to as a particular achievement. In a year and a half of signal-tower traffic on Fifth Avenue there has not been a single case of serious accident to a machine or individual reported because of a violation of these boundaries. The drivers keep to their own side and look to the signal towers for guidance.

LOOKING BACKWARD

(Continued from page 22)

each offering up its column of smell as a sacrifice for having displaced the superannuated horse!

"Is the gasoline vehicle with its innumerable chains, belts, pulleys, pipes, valves and stopcocks practicable? With so many things to get out of order, won't one or the other of them always be out of order?"

"It requires an engineer to handle a gasoline vehicle properly. No ordinary individual could be taught in a reasonably short time to steer and take care of the wagon."

The word "automobile," taken from

the French, was frowned upon by the motor car enthusiasts of the early days. "You might as well call a railroad a 'chemin de fer' as to call a horseless carriage an automobile," declared one writer.

The sure road to fame for any invention is to find its place on the subjects of themes for the younger generation, and a young woman in graduating from an Illinois college in 1896 prophesies a great future for the motor wagon, which, she says, "is shaped something like a dog cart, only about one-half the size. It has two brakes and is run by

petroleum. If the restrictive laws in regard to operating these vehicles are removed there is every reason to believe that they will become popular."

But throughout the press of the late nineties you may discern a rising appreciation of the good points of the motor car and the general belief that it would some day come into general use. And with the development of the motor car came an insistent demand for a betterment of road conditions, for "Now that we have horseless carriages," declared a Middle West newspaper man, "let us also have rutless roads."

WHY MOTOR CARS GO WRONG

Improvements in Construction and Ability an Incentive to Unwarranted Abuse

By I. M. GILBERTSON

(Copyright, 1922, by the Ullman Feature Service)

ENVIRONMENT and treatment, it is generally conceded, have much to do in determining whether a person will go right or wrong in this world. Hence it is hard to understand why car owners expect their motors to go right regardless of the treatment accorded them.

Like the young man who succeeds against all odds the occasional car

withstands abuse and keeps clear of the junk heap until having done everything an exceptional car should do. But most cars become victims of their environment so quickly that salesmen are buzzing the owners with new models before the first year is up.

The reference is not to willful destruction of cars but merely to the unwise things modern drivers do to

their cars because they take too great an advantage of the improvement in car design and durability. There is a difference.

For example, the owner of a brand new "big six" was recently observed driving through traffic in a way that attracted attention because it was done with so little effort. There was no clashing of gears, no jerking, no

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grinding or puff of exhaust smoke; merely a little acceleration of the engine as the car would start off. Veteran motorists began to wonder whether he was operating some new type of gas car or whether he was just an exceptionally clever driver.

One observer was just curious enough to follow along in an effort to see how it was done. What he found was that the pilot of the new car was simply starting the car in "high." He had discovered that the motor was powerful enough to do the trick and that by letting in the clutch gently—virtually slipping it—the car started with the gentleness of a zephyr and with little effort on his part. Things like this—as any motorist who has had experience knows—explain why cars go wrong.

First the clutch plates burn and warp. Then chattering begins whenever the clutch is engaged. Then the connecting rod bearings loosen. The wrist pins wear out and rap. The first thing the owner knows he is in the market for a new car. He doesn't realize that it was because he expected too much from the old one.

This was an exceptional instance of bad treatment, but it is a warning of how other drivers will be maltreating their cars unless they suddenly awaken to the fact that improvements in cars are designed to offer greater service, not an opportunity for the driver to be abusive. As this bad treatment was being inflicted upon a new model, which, like a number of other makes, is equipped with a very powerful engine and a flexible clutch, it is obvious that the driver in question is merely a pioneer in the abuse of regular starting in "high." In the old days a lot of drivers would have done this sort of thing had it been possible, but luckily for them the motors were not in a position to co-operate.

The whole question as to why modern

cars are going wrong by the wholesale hinges on the fact that cars are so much more capable of being abused than they used to be. This encourages unwarranted abuse of cars—and the sort of trouble that comes on by degrees.

An "old timer" who is still going around with a 1913 model suffered the annoyance of having a connecting rod rip through the crankcase of his car the other day because he raced the motor too soon after it had started. This had been unintentional, the accelerator having caught in the floor board, thus holding the throttle wide open. While the owner was wondering who had let the stone crusher loose the damage developed.

Immediate damage due to racing a cold motor was common in the old days when oiling systems were inadequate and bearings not designed to withstand abnormal heat and strain. But today it is rare; and because of this fact it is quite common to see a driver start right off racing and speeding with a cold motor. The results soon begin to show up.

Automobile salesmen and mechanics encourage a number of abuses because they handle cars when they are new and best able to endure the hardships inflicted upon them. A dealer for an expensive make of car drives home in a new one every evening, allows it to stand out all night and starts off with it in the morning just as though its motor was warm and ready for work. The oiling system is excellent, and nothing ever seems to happen. But the customer who acquires the car and follows the dealer's tactics soon comes running to the service station with a list of trouble that would break an axle. The car still goes, but it begins to go wrong. Nobody explains to the owner that it is all because he has taken too much advantage of the car's improved features.

It isn't the collisions that reduce modern cars to junk but the cumulative effect of constant bad treatment, occasioned by the belief that the new cars will stand up better and stand for more at the same time. Take the matter of feeding gas, for example, and its effect on the universal joints and pinion gear. Quick acceleration is one of the outstanding features of a number of cars, but owners make the mistake of believing that the drive mechanism will stand for this sort of strain indefinitely. Quick acceleration is for an emergency, not a regular diet.

Sudden application of the clutch is a mild form of abuse compared with the practice of suddenly accelerating the motor over and over again for no reason at all. The cars of yesterday would vigorously resist being accelerated quickly, so the drivers didn't try to hang up any acceleration records. Now cars "pick up" with remarkable ease, but all the while the drive is being strained little by little. The driver sees that the engine doesn't mind being punished and keeps on demanding the most from the car. Naturally he is surprised when a lot of backlash develops in the universals and the pinion. This excessive backlash can be taken up—at the expense of a repair bill—but nothing except installing new parts will compensate for the wear on the parts in the interim.

The finer qualities of our modern motor cars are offered not with the idea of permitting more abuse but to give longer and less troublesome life. Motorists miss the point and assume that because the cars nowadays will stand more rough treatment they are justified in overlooking some of the old precautions. But the popularity of the repair business ought to mean something to them. The life of a car—even with today's improvements—is just what the owner makes it.

MILADY MOTORIST

(Continued from page 17)

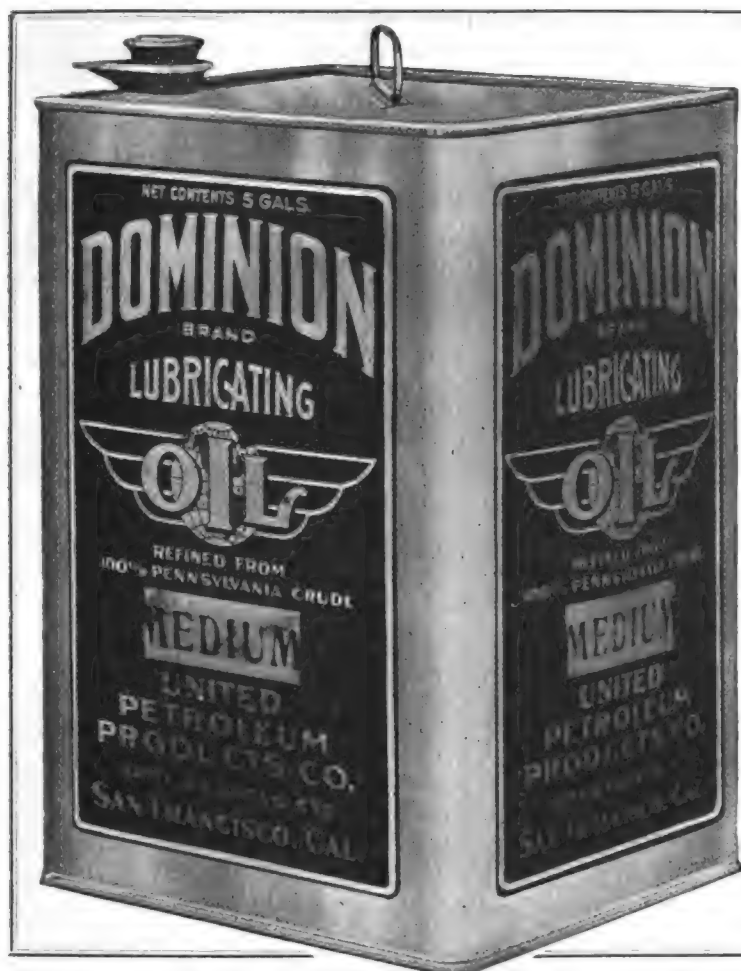
and as long as it appears in charming models, there is no earthly reason why the sweater should go out of vogue simply because it is an old idea. Fashions, as a rule, do not die a natural death. Very often they are ousted by the element who do not find them becoming. For instance, those unfortunates whose ankles and general contour were not enhanced by the short skirts stood them just as long as they could, and then—presto! And the long skirt came in with its welcome folds to cover up a multitude of sins.

But the sweater is everybody's pet. It looks well on almost everyone, is comfortable, attractive and inexpensive

—therefore permitting great variety, and its horoscope indicates a long and exceedingly busy existence. It is as much a part of the modern sport wardrobe as a bathing suit.

And speaking of bathing suits—here's a good opportunity to drop a word in praise of the delightful models that have appeared this season. Great originality and real brains have been used in designing bathing costumes to combine maximum style with a minimum loss of comfort or good taste. All sorts of variations have been developed from the hackneyed style of suit, including fantastic models of gingham, cretonne, rubber and batik silks.

Some of these have been successful and in a measure popular, but they will go out of vogue very quickly, while the old reliable knitted suit of wool will continue to find favor in the eyes of the discriminating bather. They appear each season—just as sweaters do—in new weaves, new designs, new colors—but built on the same foundation. The close-fitting wool suit is no doubt the most comfortable rig for the really determined swimmer. It is obviously the only type to wear for water sports—aquaplaning, etc. And each season it will appear in a different guise—perhaps more attractive, but just as comfortable, convenient and popular.



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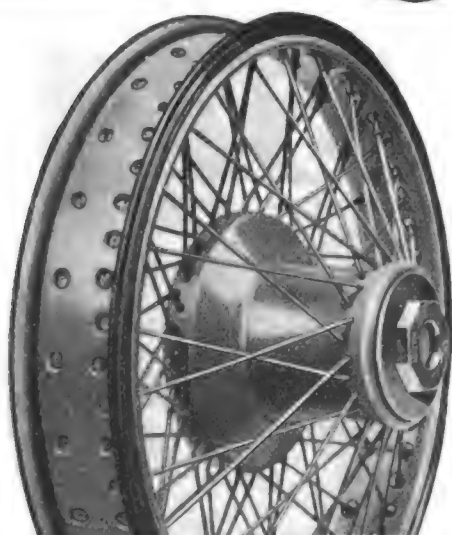
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HERE AND THERE IN MOTORDOM

Gossip on Automotive Industry Activities

New Buick Models

With the arrival of the new 1923 models of Buick motor cars, the initial gun in the coming season's campaign has been sounded by the Howard Automobile Company. Inasmuch as there has been a radical departure in the design of several of the Buick models interest has been exceptionally keen.

The initial shipments to the Pacific Coast were made by express, several carloads of the 1923 Buicks coming from Flint, Mich., in record time so that the motorists of the Pacific Coast would be able to inspect the new cars on the same date that they were being exhibited throughout the country.

With fourteen distinctive models, the new Buick line is very complete. Two closed types are the six-cylinder touring sedan and the four-cylinder touring sedan; entirely new models which have been added to the line. With Fisher built bodies, exquisite upholstery and all the up-to-date improvements, constructed on the standard Buick chassis, these new creations from the Buick factory have made a most favorable impression upon motorists who prefer closed cars.

Another interesting announcement in connection with the introduction of the 1923 Buicks is the attractive prices at which they are listed for delivery on the Pacific Coast. The popular six-cylinder touring car, with its many mechanical improvements and high-class finish, now sells for \$1,425, freight and tax included, while the four-cylinder touring car lists for \$1,075. The touring sedans sell for \$2,210 and \$1,540, for the six-cylinder and four-cylinder models respectively. The rest of the line includes a four-cylinder roadster

for \$1,050, a four-cylinder coupe for \$1,385 and a four-cylinder sedan for \$1,625, a six-cylinder roadster for \$1,400, a seven-passenger touring car for \$1,690, a three-passenger coupe for \$2,180, a five-passenger sedan for \$2,270, a seven-passenger sedan for \$2,495, and two sport models, a roadster for \$1,890 and a four-passenger touring car for \$1,945.

No single season has seen so many improvements in Buick cars. For over twenty years Buick has been a leading exponent of valve-in-head principle of motor design.

A few of the changes are a new rear spring suspension; the engine is fitted with longer pistons and connecting rods, adding to the smoothness and long wear; the frame, transmission, rear axle, brakes, the bodies and equipment all show the hand of skilled designers with something new and valuable.

The insurance companies have rated all fourteen models as Class A fire risks, because of the safety of their electrical and gasoline systems. The theft rate has been materially reduced because of the protection afforded by the stout transmission lock, another new Buick feature.

Auto-Bungalow Is Tested

Auto-Bungalow is a new word which will probably appear in all new unabridged dictionaries. It means a complete home on wheels.

The Auto-Bungalow is a hybrid, born of the camping vogue now prevalent everywhere. Up to this time, these outfits have mostly been homemade, without any thought of body lines or standardization of equipment, with the result that to many they have been unattractive and unsatisfactory.

To meet the steady demand for this type of equipment, the Reo Motor Car Company of California has designed a standard model, fitted to the Speed Wagon; and this Reo Auto-Bungalow has a very pleasing appearance, resembling somewhat an up-to-date motor bus, and has a road speed of 30 to 35 miles per hour. It handles as easily as a sedan, and is able to negotiate mountain roads where any other motor vehicle can safely go.

The Bungalow body is mounted on the Reo Speed Wagon chassis of 126" wheelbase. The height is sufficient to allow the occupants to stand erect inside. Airplane spruce is used largely in the construction, to prevent the superstructure from being top-heavy.

The interior equipment includes the following features: Writing desk, combination buffet and ice chest, Ottoman bed of Pullman type, clothes closet, gas stove, white enameled sink with closet for cooking utensils, hot and cold circulating water, toilet, two revolving portable leather-covered chairs, portable collapsible dining table, clock, rear view mirror, floor covered with battleship linoleum, nickel-plated and glass hardware, opaque curtains and interior portieres (insuring privacy), and two dome lights to provide sufficient illumination.

The interior of the bus is stained and varnished; the exterior is painted and finished in colors selected by the purchaser. The ventilation is accomplished by drop windows, which in each case are supplied with screens. There is a door on the front right-hand side; and a rear door with rear folding step, making it easy for both entrance and exit.

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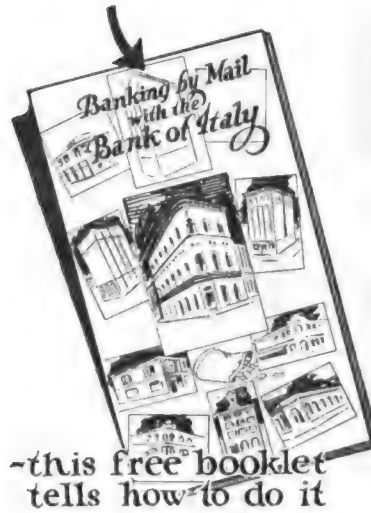
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Coast Tire Development

As an evidence of the recognition on the part of the consumer of a meritorious product, the sales of Coast tires have reached extraordinary proportions.

While the Coast Tire and Rubber Company of Oakland has been engaged in making high-grade tires and tubes for a little over a year and has shown a highly gratifying increase in sales from month to month, the stride made in the last sixty days has exceeded the most optimistic expectations.

After a series of exhaustive experiments the Coast Tire and Rubber Company has placed on the market two new tires, the "Scout 49," a clincher type fabric tire for small cars, and "Coast Ranger," a cord tire in both clincher and straight side types in small sizes.

The success of those two tires has been phenomenal and today the factory at Oakland is several thousand tires behind in production. Additional experienced workmen are being employed in the factory and every effort is being made to take care of the orders of its dealers in various sections of the country.

Another fact that contributes to the demand for Coast tires is the recent reduction in price, effective August 10th.

The quality of Coast tires has been repeatedly demonstrated under a wide variety of road and racing tests and the average motorist has become thoroughly sold on the merits of these tires for actual everyday use, according to a great volume of letters received by the Coast Tire and Rubber Company and its dealers throughout the Pacific Coast section.

New Jewett Models

Two new Jewett models have recently been added to the line by the Paige Company—a roadster and a sedan. The roadster, designed primarily for the salesman, has an exceptional amount of room under the rear deck, accommodating four or five suitcases and a golf bag, if the owner may be so inclined. The body is mounted on a standard Jewett chassis, which is noted for its sturdiness and great power.

The sedan is also mounted on the standard Jewett chassis. By the use of an all-metal body with welded joints, it is claimed that rattles and squeaks have almost entirely been eliminated, a big step forward in sedan construction, which will undoubtedly make the closed car a much more popular cross-country automobile than it has ever been. The body is deep, with the windows large and all about the same size, all of which can be lowered or raised as the passengers may desire. Upholstery is in blue sedan cloth of exceptional quality, mounted on closely fitted coiled springs, and ample room is afforded for five full-grown passengers. The body is also fitted with sun visor and cowl ventilator and is mounted on 54-inch semi-elliptic underslung rear springs, assuring the passengers a very comfortably riding car regardless of road conditions. It is motored with a 3½x5 Paige built motor formerly used in the light six Paige, which delivers fifty horsepower at

moderately low engine speed. It is the same power plant which was recently used in breaking every hill-climbing record in Northern California and a great asset in a closed car where ordinarily a motor with less power would seem sluggish with the added weight found in enclosed cars. They are priced with all charges paid on the Coast at \$1,195 for the roadster and \$1,735 for the sedan.

Tire Plant in Full Blast

There is nothing the matter with the tire industry in California, viewed from a manufacturing standpoint, as is evidenced by the great activity at the plant of the Samson Tire & Rubber Corporation, at Compton, near Los Angeles.

According to A. Schleicher, president and general manager, the Samson plant is operating day and night in eight-hour shifts to meet the unprecedented demand for Samson Super-Cord tires which has grown progressively during the summer, shows no sign of abatement in August and from every indication promises to continue into the fall.

Referring to the marked activity at the Samson plant, President Schleicher said: "We increased our production capacity in some departments 200%, and other departments 400% during the winter and spring by the addition of nearly a quarter of a million dollars worth of machinery and building additions, and to have this enlarged plant operating at full capacity, day and night, is indeed a good testimonial of the continued and rapid growth of California's first successful tire industry."

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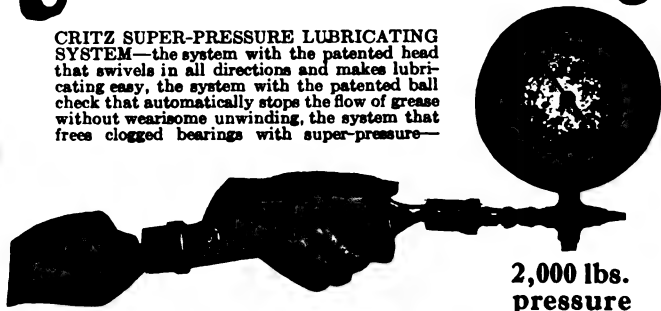
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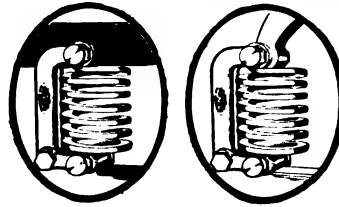


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"At this time when there is so much talk about tires being built 'too good' and a decision on the part of some manufacturers to build a less durable product at a lower price, we have exactly the reverse opinion, substantiated by a gain of 87% in the first five months of 1922 in our production and sales of a product in which our constant effort is to start the mileage for our consumer user.

"The reason for Samson popularity is found in the unusual construction, strength, over-size and non-skid qualities built into Samson tires, which are assets highly valued by the user, who in addition, demands an economical tire that will deliver the greatest mileage for his money, with freedom from blow-out worries, and with a non-skid efficiency that adds greatly to the safety of himself and family during wet weather.

"While there are arguments in favor of building a cheap product in order to get repeat business for certain factories who say they are unable to keep their plants busy on a better quality product, we believe that there is a large proportion of people, particularly on the Pacific Coast, who demand a product that measures up to their requirements of mileage and safety and who are not willing to risk their lives with inefficient non-skid tires or waste their time changing inferior quality of tires when they can procure, for practically the same amount, a tire of unquestioned quality and dependability.

"During the last six months or year of constant price depression, which depressions have in many instances, we are told, been offset by depreciation of quality, we have been more careful than ever to maintain our quality, to add to its dependability and to guarantee our dealers and their customers the usual Samson quality.



New Safety Coach equipped with Gruss Air Springs

"Our policy, upon which the Samson Tire & Rubber Corporation has so persistently and steadily grown to its present proportion, is expressed in a few words: 'Samson Tires Must Make Good or We Will,' and to be able to fulfill the exact meaning of this phrase is only possible by striving at all times to build a tire of unusual quality."

Safety Coach Makes Debut

The newest creation of the Fageol Motors Company is the Fageol Safety Coach pictured on this page.

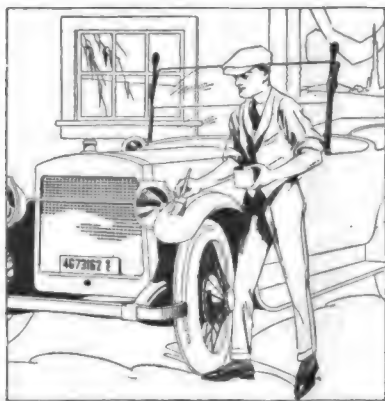
It is specially designed and built for passenger highway transportation and sets a new Pullman car standard for luxurious motor stage travel.

Gruss air springs have been adopted as standard equipment, and thus road vibration is reduced to its absolute minimum.

In fact, the Fageol Coach has such riding qualities that chairs are provided instead of the customary seats, and tables are provided so that passengers may play cards or read with the greatest of comfort.

The Fageol Safety Coach is of particular interest in that from Hall Scott motor to Gruss air springs it is constructed almost entirely of California-made units.

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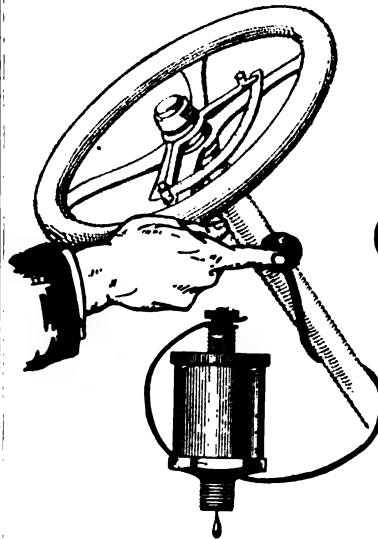
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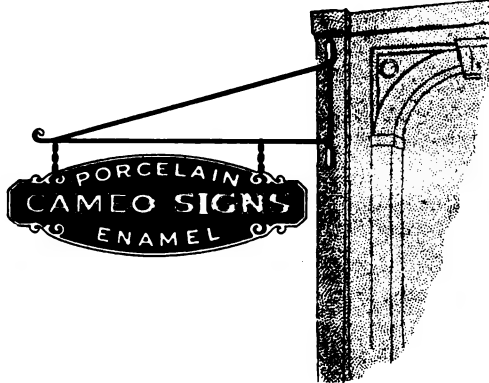
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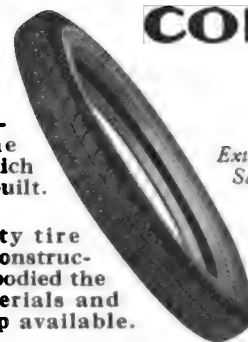
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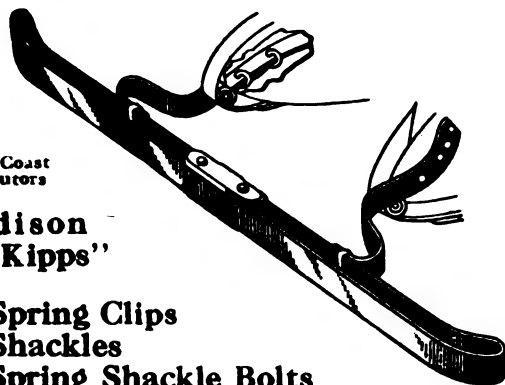
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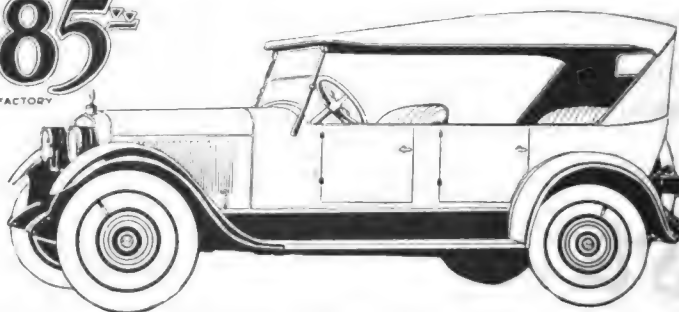
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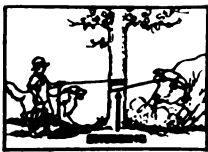
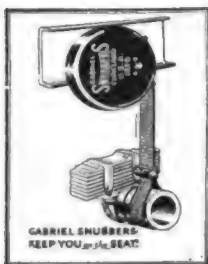
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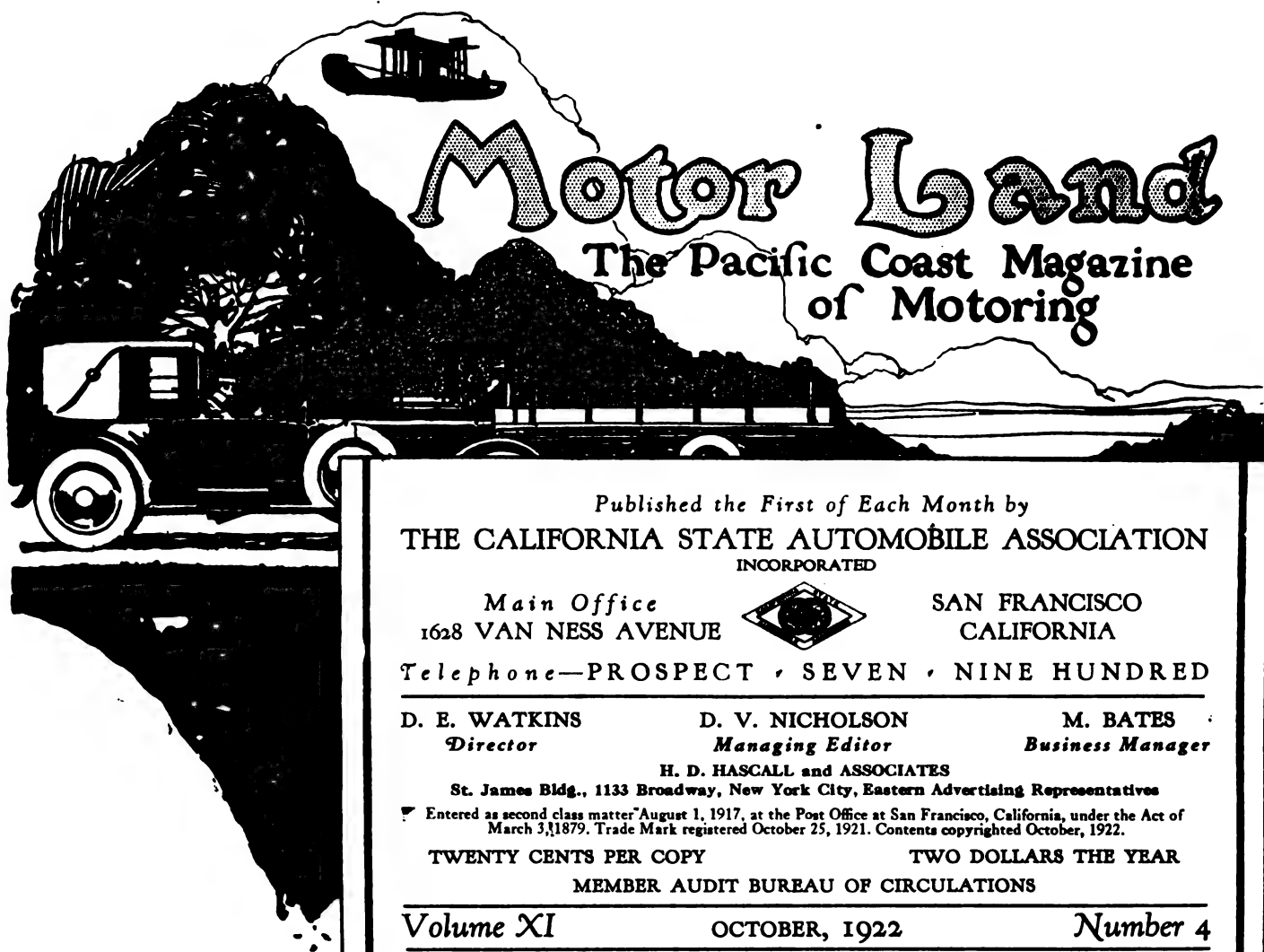
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Volume XI

OCTOBER, 1922

Number 4

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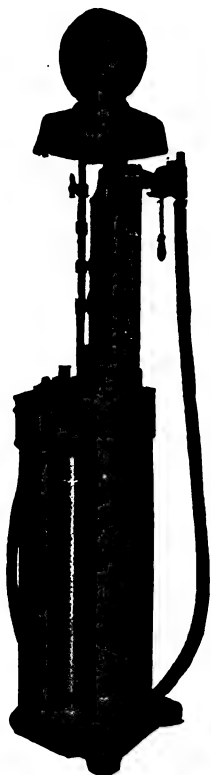
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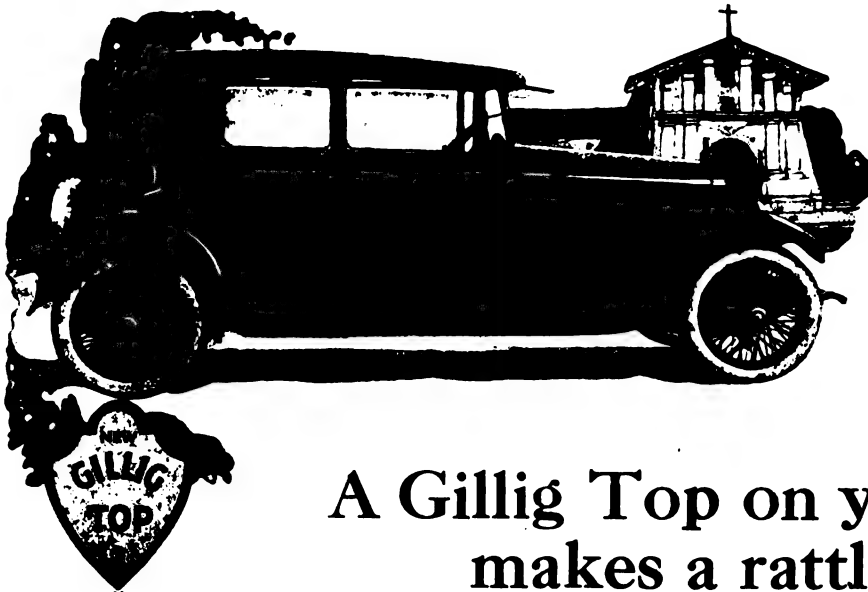
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are not only good to look at—they are every bit as good as they look.

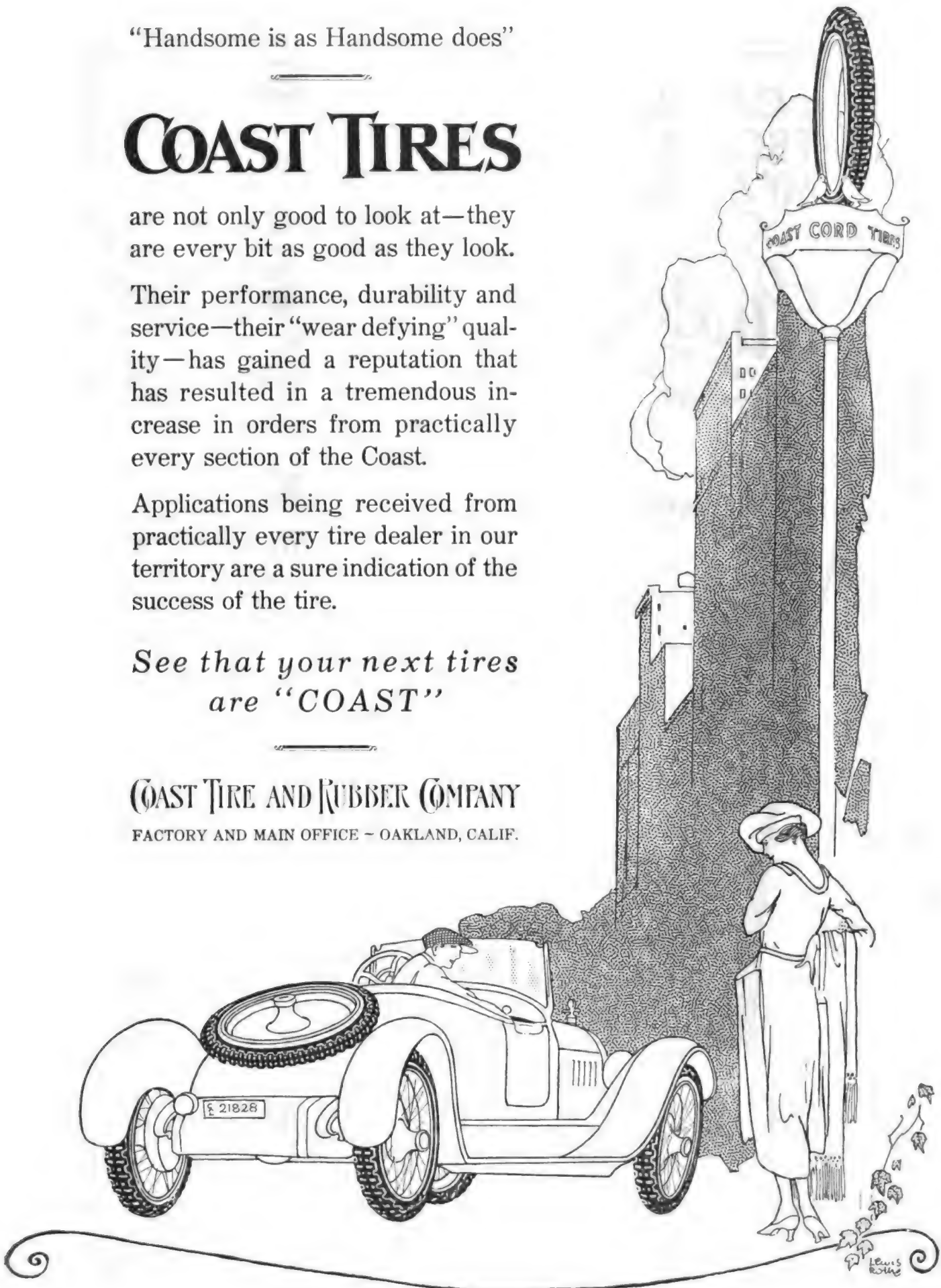
Their performance, durability and service—their "wear defying" quality—has gained a reputation that has resulted in a tremendous increase in orders from practically every section of the Coast.

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*See that your next tires
are "COAST"*

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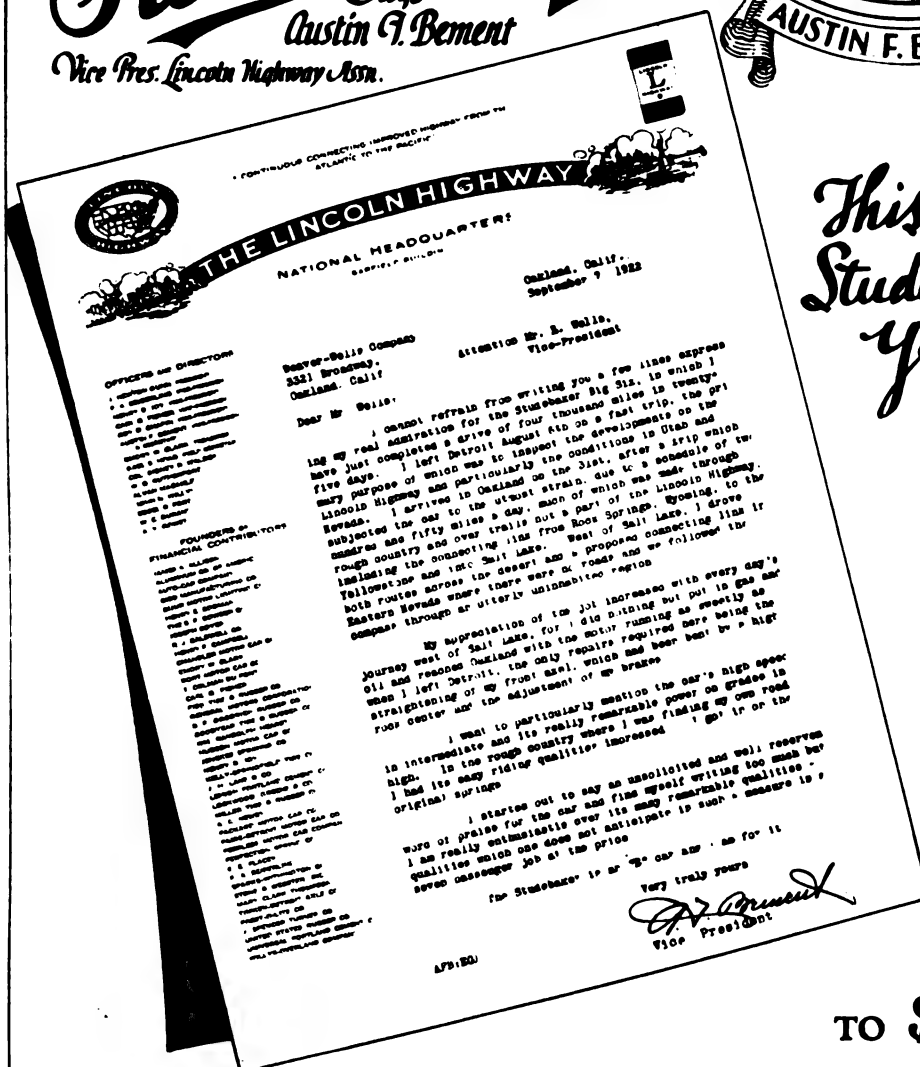


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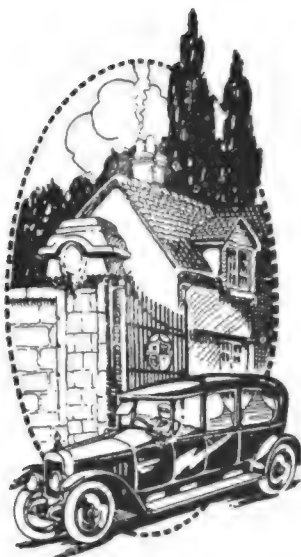
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CURRENT COMMENT

AS LONG as the number of motor vehicles increases, the cry of "Safety First" will be heard from every side. There are many accidents that are unavoidable, of course, but the fact remains that a great percentage of the motor vehicle accidents that are reckoned up every week end when the peak of traffic is reached are due to carelessness or negligence on the part of one or other of the parties concerned.

Apropos of the prevention of automobile accidents, Frank A. Goodwin, registrar of motor vehicles of the State of Massachusetts, remarked the other day: "It is much easier to educate the operator of a motor vehicle in regard to safety and its meaning, than to educate the great masses of the people."

"Of course the pedestrian is careless, and thoughtless, and sometimes reckless," said Goodwin, "but the operator must remember the pedestrian does not have to have a license to be on the street. On the other hand, the motorist must have a license, because he is operating something that can kill and maim. Let us suppose in a certain accident that both the pedestrian and the operator are careless. The penalty the pedestrian pays is out of all proportion to the penalty paid by the motorist. The pedestrian may pay with his life, while the motorist in fifty per cent of the cases pays nothing. He isn't even insured. The killing of children is the most heart-rending and most common among the motor vehicle accidents. Whenever a motorist sees children in the street, or on the sidewalk adjacent, he should get his car into absolute control. He has no right to assume that the child is going to stop, stand, run, or turn around because, as a rule, the child does exactly what the operator doesn't think he will do. It is the duty of the operator to put his foot on the brake. He must not try to outguess the child. It is better for him to lose a second of his time than to take a human life.

"Now just a word to the pedestrians. While the great burden of care to avoid motor vehicle accidents rests upon the motorist, the pedestrian has no right to be a nuisance on the highway. He should cross the street only at crossings. He should look first to the left, and then to the right before crossing a street. He should not dart out suddenly from behind either standing or moving vehicles. He should not jump from moving street cars. Children should be cautioned continually by parents and teachers of the dangers of the highway. They should not play ball in the street, hook on behind vehicles, coast across travelled highways, or run out from behind other vehicles. In our attempt to lessen the number of accidents, we have no doubt criticized and advised the motorist more than we have the pedestrian; but it seems to be the only thing to do. It is an impossible task to educate all the pedestrians, because every one is a pedestrian. That class is made up

of children, old people, the blind, the deaf, and cripples. On the other hand, any person who is fit to have a license to operate automobiles ought to be of an intelligent age, and a person of judgment and discretion. It is much easier to educate a class of this kind than the great rank and file of the people."

Traffic regulation is becoming more and more strict and public opinion is growing more and more intolerant against careless or negligent drivers and no plea can be made too strong that has as its end the reduction in the accident toll throughout the country. The automobile industry is a young industry and traffic control has not yet been developed to its perfected stage but there has been a great stride forward in the last few months and another year of studying the situation will revolutionize the methods of controlling traffic on our crowded thoroughfares.

In the meantime, caution, a driving rule of "well within the law" and a confidence in the healthy condition of the machine that you drive will go far toward promulgating the doctrine of safety.

Here are a few suggestions of value prepared in a safety first campaign put on in the East. They are well worth consideration:

1. Put yourself behind the other man's steering wheel.
2. Don't laugh at timid passengers. They're your guests. Make them comfortable.
3. Don't expect children to look out for themselves. The fact that it was the child's "fault" doesn't make death less terrible.
4. When a man in the wrong insists on the right-of-way, let him have it. You can't argue with a fool.
5. Get the hand-signal habit. It protects you as well as others.
6. When the man behind wants to pass, slow down and draw over. It's safer to have him speeding ahead of you than alongside you.
7. Don't dash by street cars as they are about to stop.
8. Don't try to pass the car ahead when another car is approaching from the opposite direction.
9. Slow down and keep to the right as you come to the crest of a hill.
10. Don't dispute the crossing with a railroad train. What's the hurry?
11. Think of the other road users when you have to splash through mud or water.
12. Remember that the pedestrian at the crossing has a right to cross.
13. Don't drive jerkily. It keeps the man behind you worried.
14. When your brakes aren't working, the time to get them fixed is NOW.
15. The Golden Rule is the best Road Rule.



Mt. Shasta, called by John Muir the "Pole star of the landscape," a striking peak of the northern Sierra

MOUNT SHASTA

MOUNT SHASTA rises in solitary grandeur from the edge of a comparatively low and lightly sculptured lava plain near the northern extremity of the Sierra, and maintains a far more impressive and commanding individuality than any other mountain within the limits of California. Go where you may, within a radius of from fifty to a hundred miles or more, there stands before you the colossal cone of Shasta, clad in ice and snow, the one grand, unmistakable landmark—the pole-star of the landscape.

Approaching Shasta from the south, one obtains glimpses of its snowy cone here and there through the trees from the tops of hills and ridges; but it is not until Strawberry Valley is reached, where there is a grand out-opening of the forests, that Shasta is seen in all its glory, from base to crown clearly revealed with its wealth of woods and waters and fountain snow, rejoicing in the bright mountain sky, and radiating beauty on all the subject landscape like a sun. Standing in a fringing thicket of purple spiraea in the immediate foreground is a smooth expanse of green meadow with its meandering stream, one of the smaller affluents of the Sacramento; then a zone of dark, close forest, its countless spires of pine and fir rising above one another on the swelling base of the mountain in glorious array; and over all the great white cone sweeping far into the thin, keen sky—meadow, forest and grand icy summit harmoniously blending and making one sublime picture evenly balanced.

The main lines of the landscape are immensely bold and simple, and so regular that it needs all its shaggy wealth of woods and chaparral and its finely tinted ice and snow and brown jutting crags to keep it from looking conventional. In general views of the mountain three distinct zones may be readily defined. The first, which may be called the Chaparral Zone, extends around the base in a magnificent sweep nearly a hundred miles in length on its lower edge, and with a breadth of about seven miles. It is a dense growth of chaparral from three to six or eight feet high, composed chiefly of man-

zanita, cherry, chincapin, and several species of ceanothus, called deer-brush by the hunters, forming when in full bloom one of the most glorious flower-beds conceivable.

The next higher is the Fir Zone, made up almost exclusively of two species of silver-fir. It is from two to three miles wide, has an average elevation above the sea of some 6,000 feet on its lower edge, 8,000 on its upper, and is the most regular and best defined of the three.

The Alpine Zone has a rugged, straggling growth of storm-beaten dwarf pines which forms the upper edge of the timber line. This species reaches an elevation of about 9,000 feet, but at this height the tops of the trees rise only a few feet into the thin frosty air, and are closely pressed and shorn by wind and snow; yet they hold on bravely and put forth an abundance of beautiful purple flowers and produce cones and seeds.

Shasta is a fire-mountain, an old volcano gradually accumulated and built up into the blue deep of the sky by successive eruptions of ashes and molten lava, which, shot high in the air and falling in darkening showers, and flowing from chasms and craters, grew outward and upward like the trunk of a knotty, bulging tree.

The nights, too, are delightful, watching with Shasta beneath the great starry dome. A thousand thousand voices are heard, but so finely blended they seem a part of the night itself, and make a deeper silence. And how grandly do the great logs and branches of your camp-fire give forth the heat and light that during their long century-lives they have so slowly gathered from the sun, storing it away in beautiful dotted cells and beads of amber gum! The neighboring trees look into the charmed circle as if the noon of another day had come, familiar flowers and grasses that chance to be near seem far more beautiful and impressive than by day, and as the dead trees give forth their light all the other riches of their lives seem to be set free and with the rejoicing flames rise again to the sky.

—John Muir, in 1894.

TOURING INSPIRATION ON THE PACIFIC COAST

Remarkable History of State as Well as Its Magnificent Scenery Proves Motor Travel Lure

By VONARD FRASER

MANY of the motorists of California fail to appreciate the opportunities for touring which the Pacific Coast has to offer. Perhaps it is because they travel over the same roads day in and day out and fail to plan their touring expeditions with an idea of the true explorer. In spite of the amount of touring and the number of motor cars in California there are still some sections which have never had the thrill of looking on their first automobile. Only last year the writer made a trip to Modoc county and an old Indian made his first acquaintance with a motor car. And there were roads through the district, too. It was just because it never occurred to anyone that in that particular section there was something well worth the going to see.

If there ever was a land where Emerson's *Waldeinsamkeit* might be appreciated, that land is California.

"I do not count the hours I spend
In wandering by the sea;
The forest is my loyal friend,
Like God it useth me.

In plains that room for shadows make
Of skirting hills to lie,
Bound in by streams that give and take
Their colors from the sky.

Or on the mountain-crest sublime,
Or down the oaken glade,
O what have I to do with Time?
For this the day was made."

A Motion Picture

Somehow the motor car gives you an impression of nature that you derive in no other way. I remember the first time I visited the Sierra region in

a motor car. Some years before I had made the same journey, much of it afoot. But the swiftness of my later steed, that rapid transit which has been bestowed on us within the last twenty years or so, lent a new appreciation of the country through which I passed. Town after town flashed by like small ships passed at sea and as we wound upward ever upward on the shoulders of the mountains and the vista of the sublime bordering rim of the Yosemite came nearer and nearer I felt like one of the gods in Homer speeding back from the common warfare of mankind to the peaceful summits of the mountain tops.

There is a poetry in the motor car that has yet to be written. It does not lie in its mechanical features though even here there is a great romance of engineering development, but it is to be found in that inspiration that comes to the occupant of the car wafted along with the speed of the wind while Nature's gorgeous panorama of changing colors flashes by like an infinite motion picture on an endless reel of film. Perhaps we shall find in the super-development of speed the problematical fifth dimension of happiness, at any rate it offers now a most attractive method of forming an acquaintance with Nature and the acquisition of a comprehensive idea of the grandeur and extent of Nature's handiwork.

Educating the Child

The child who has travelled over the scenic highways of California has a keener appreciation of the beauties to be found in literature than his less fortunate brother who has seen little of the varying attractions of this state of diversified charm. California is a great laboratory for developing an

understanding of Nature that has yet to be sounded to its depths.

Only last week a mother arrived on the Coast with her five children after a tour of the United States. She decided to teach her children geography and history at first hand and this vacation trip, for it seemed that to the children, was well worth while. And it has proved a good investment in health as well.

One of the saving graces of motoring is the tendency to increase interest in the great out-of-doors and to cultivate in the spirit of those who motor a regard for Nature and the beauties of her handiwork. No one can camp out in the open on this great Pacific Coast without an increasing love for the marvelous creations of forest and stream and mountain peak and the pied meadows of variegated wildflowers that make our California landscapes things of beauty and joys forever.

Europe and Its Scenery

There is scarcely a scene in Europe's famous Natural museums of beauty that may not be duplicated within the confines of the Pacific Coast states. The poet who wrote of "lovely Lake Geneva" had never witnessed the sunrise from the brim of Crater Lake in Oregon or stood on the Nevada boundary and watched the wonderful reflections in the depths of Lake Tahoe. True, we have no castellated palaces of antiquated design wreathed in the glamour of romance, but I am speaking here not of the works of man but of those of Nature.

English poetry has a great debt to pay to the Lake district of central Britain. Yet much of the scenery that crops up throughout the effusions of Wordsworth and Southey and Cole-



Crater Lake, Oregon, on the Pacific Highway, one of the most beautiful lakes in the world

ridge and in the ballad poetry of the author of "The Lady of the Lake" and "Marmion" can be duplicated here in California.

Wordsworth found much to delight him in the beauties of Windermere and Grasmere and the rural surroundings of the world famous lake district of England. Keats looked forward with a great deal of interest to the ascent of Helvellyan and Skiddaw and, in his walking tour with Brown through the north of England and Scotland, marvelled at the great height of the mountains and the lonely grandeur of their rugged heights. Yet Helvellyan, the mountain that towers over Wordsworth's home of Rydal Mount, is only 3,055 feet in elevation, and Skiddaw, that bare bleak peak of the English lakes, is only 3,022 feet in height.

Diablo and Tamalpais

Travel over the Ridgecrest boulevard to the summit of Tamalpais and you attain an elevation of 2,700 feet, or follow the automobile toll road to the summit of Diablo and you will find yourself 3,869 feet above tide level, 800 feet higher than the famous mountain peaks of the lake poets and from whose summit you may see farther perhaps than from any single mountain in the world.

In George Borrow's "Wild Wales" we read much about the loftiness of the Welsh mountains yet we find that Snowdon, the highest of all the peaks of Wales, is only 3,571 feet above tide level, nearly three hundred feet lower than Diablo.

We hear a great deal about the marvels of the Matterhorn and we are prone to exaggerate its height until it seems something beyond the ken of mortal men. The Matterhorn stands 14,780 feet above sea level. Have you ever visited the region of Mt. Whitney, the loftiest peak in the continental United States? It is just 118 feet higher than its more famous brother peak, the Matterhorn.

Most of the Alpine peaks of Switzerland are little higher than our own Sierras and a great many of them are much lower and in all Switzerland you cannot get as close to these mighty brothers of the snow-capped crowns as you may over the Tioga road between Tahoe and Yosemite.

The Greek Olympus

The Greek used to look on Mt. Olympus as so majestic and so sublime that no man could ever ascend its peak. There in glory they located their realm of the gods and the court of Zeus and Hera was supposed to be situated on the crown of this snow-capped height. Yet the motor car has brought a California Olympus within easy



Hemlocks on the shoulders of Mt. Lassen, the California Olympus

reach of the hiker. Mr. Lassen is several hundred feet higher than the Olympus of Greece and an enthusiastic hiker ascended the last trail up this peak in a little over thirty minutes the other day. The Olympian deities would have had a most enjoyable time of it had they decided to move bag and baggage to the high Sierras of California. If they had picked out Mt. Lassen they might have had steam heated apartments kept by old Hades himself.

For waterfalls you need not travel to Africa and its Victoria Nyanza or to the pretty little cascades they designate as falls in England and France. Nor need you travel across the continent to Niagara. Most tourists who have been familiar with the sublime waterfalls of the Yosemite region are grievously disappointed at the somewhat staid though grand 164-foot fall of the Niagara. Africa's great waterfall at the source of the Nile is only 400 feet in height. There is no more beautiful and certainly no higher waterfall than that of Yosemite with its 2,450-foot drop.

History and Romance

The scenic attractions of California offer not the only opportunity for enhancing the pleasures of motoring. In historical record and in the romance that grows from the ancient archives of history it stands unique. It is cosmopolitan in its romance, too, for almost every nation has had an opportunity of impressing on the records of California something of its own.

Up on the northern Marin Coast we find the relics of the days of the Russian occupation. The Greek church is still there where the Russian soldiers worshipped. The old barracks are still standing and there are other mute reminiscences of this ill-fated attempt of the Czar to establish a colonial settlement on the rich coast of the Californias.

In the vicinity of the Russian settlement we find a vast hoard of Indian relics and the anchorage of Sir Francis Drake and the Golden Hinde. The romantic days of Good Queen Bess are thus closely allied to the story of California. Drive over to the neighboring county of Sonoma and you will find the remnants of the early days of California—California when it was not one of the United States but a Republic all in itself, separate and distinct from the union.

Immigrant Days

Drive on up to the Capital at Sacramento and visit the old museum that was once the fort of Captain John A. Sutter, the objective of all the immigrants of the early days. Only a few miles away at Coloma is the spot where gold was first discovered and California found a rapid rise to world fame.

Drive down the peninsula to Monterey and you will find the first state capital where the constitution of California was adopted and where the customs house of Old Spain and Old Mexico still stands. It was over this famous old relic that Commodore Sloat raised the Stars and Stripes in the

(Continued on page 30)

SAVINGS, SERVICE AND INSURANCE

Insurance Department of Association Offers Many Advantages

OF THE many advantages to be derived by motor car owners from membership in the California State Automobile Association, those offered by its insurance department are among the most tangible and conspicuous. Like the Association's



GEORGE E. CHALMERS
Assistant General Manager
California State Automobile
Association

road signs, which are so cunningly designed to catch the eye of the motorist, the "Savings and Service" of the Inter-Insurance Bureau stand out, clear-cut and alluring, on the member's mental horizon.

At first glance, the savings feature is perhaps the more arresting.

But this is only because "service" is a hackneyed word which cannot, without elaboration, convey any adequate idea of the benefits which it here stands for. The economies effected in automobile insurance costs are most substantial, as we shall presently see; but the other services rendered by this department are perhaps even more important. Indeed they will mostly be found upon analysis to constitute further savings, even though they can not always be exactly appraised in dollars and cents.

Insure in Your Own Company

To begin with, there is the advantage of being insured in *your own* company—in an Association of which you are a contributing member and in which you have a proprietary interest. Let us

assume that you are using the Association constantly in various ways—for touring directions, for legal advice, etc. As a consequence you are on a cordial footing with its direct representatives in your locality. Its district office is a friendly place.

Your automobile is damaged by fire, or it is stolen, or wrecked. This is annoying at the best. The loss must be reported; the car repaired; there will be delays—expense—Most annoying, to be sure—one of those unexpected, tantalizing occurrences that frustrate plans and consume time and thought; that suddenly shunt one off onto a rugged detour, away from the smooth highway of one's main concerns. But let us see. That loss must be reported—yes—but it is to be reported in this instance to that friend of yours with whom your membership card is an unfailing passport to preferred attention—whose daily routine is merely a succession of eager services—whose every thought and effort are instinctively directed to the service, the convenience and the satisfaction of that all-important personage, the Member. So things are not so bad after all. You are off the main highway perhaps, but you are on the "best temporary route." For in this situation (if your claim is a proper one presented in good faith) the relationship of claimant and adjuster quickly resolves itself into that of member and representative—employer and employee. And it will remain on just that basis until your car is ready to be driven home, the employee meanwhile exerting himself in every way possible to make sure of sound repairs, to eliminate delays and inconveniences, and to purge your

mind of all misgivings—in short, to show himself worthy of the salary that *you* and your fellow members are paying him.

Adjusting Against Time

In this matter of minimizing the delays and annoyances attendant upon motor car mishaps, let us particularize, briefly, from the record:

Claim No. 11518. Car burned in private garage at member's residence in San Francisco, April 21, 10:20 p. m. Association notified by telephone, April 22, 9:10 a. m. Adjuster inspected car, 9:45 a. m. Member accompanied adjuster to Association's office and received check for \$1,200 (face of policy), April 22, 11:00 a. m.

Claim No. 19848. Car burned in Oakland, Calif., July 16 (Sunday), 2:15 p. m. Association notified July 17, 9:15 a. m. Adjuster from San Francisco office inspected car July 17, 1 p. m. Check for \$2,600 (face of policy) delivered to member July 18.

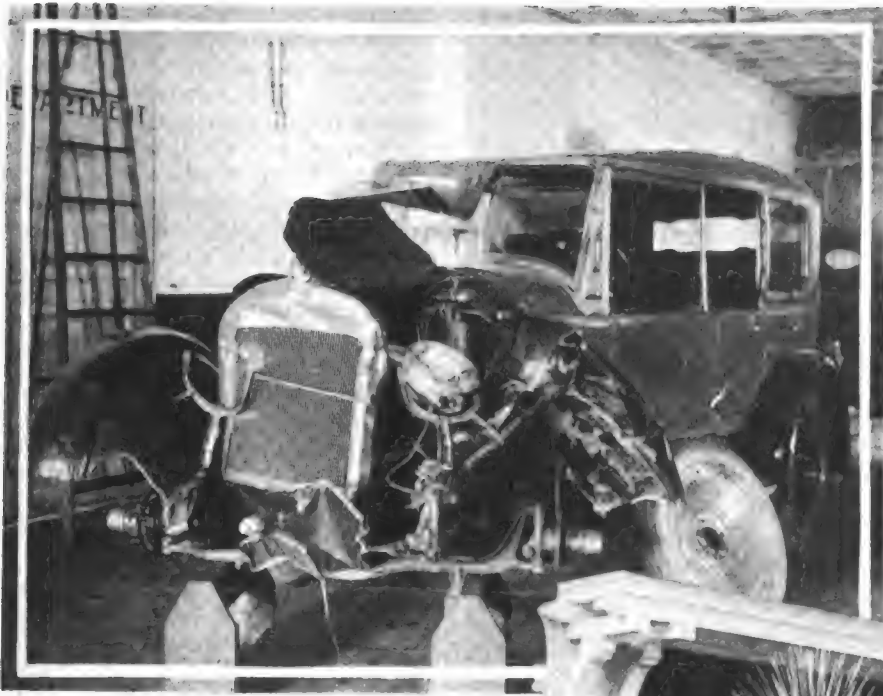
Claim No. 19990. Car wrecked and left in gulch near Monte Rio, July 20, 10:30 p. m. Association notified July 21, 9:15 a. m. Adjuster left San Francisco 10:30 a. m. Arrived at Bohemian Grove, interviewing member, 2:45 p. m. Had wrecked car in San Francisco, 9:30 p. m., July 21. Mechanics on the job the following morning, full speed ahead. Daily inspections by adjuster during progress of repairs.

Claim No. 14780. New car, badly wrecked near Redding, Calif., Oct. 31, 2:30 a. m. Reported to Association's office at Redding, 9:00 a. m. Redding office notified San Francisco office by telephone, 9:15 a. m. Adjuster arrived at Redding Nov. 1, 8:00 a. m. Member received check covering the damage (\$1,385) at 10:30 a. m., Nov. 1. This check, plus the wreckage, bought the member a new car of the same make and model.

Claim No. 20254. Yale lock broken and two spare tires with rims and covers stolen from parked car in Fresno, Calif., Aug. 1, between 7:00 and 11:00 p. m. Association's Fresno office notified by telephone Aug. 2, 9:00 a. m. Equipment purchased, mounted



Dictation hour at the C. S. A. A. Inter-Insurance Bureau, San Francisco office. Here are issued the policies under which insured members save many thousands of dollars annually in automobile insurance premiums. In the left background (mezzanine) may be glimpsed a section of the Claim Department, now handling members' losses at the rate of 10,000 claims a year.



Above—Claim No. 12432. Quite a wreck. Fortunately nobody was injured.

Right—And the car, after treatment by the C. S. A. A., was none the worse for the experience. Amount of loss \$1,742.85.

and delivered to member's residence by adjuster, Aug. 2, 1:00 p. m.

Claim No. 16490. Member, commercial traveler, traveling out of San Francisco. Parked car in front of hotel, Chico, Calif., on the night of Feb. 2. Two spare tires, rims, etc., stolen. Reported to Association's Chico office Feb. 3, 9:30 a. m. Chico office verified coverage by telephoning to San Francisco office, 9:35 a. m. New equipment purchased and installed on member's car 10:15 a. m.

Not every loss can be disposed of as expeditiously as those noted here. Difficulties will arise, and delays will occasionally occur. Also, it should not be inferred that the Association seeks advertisement by recognition of improper claims or by lavish over-payments, or by settling any loss without a business-like investigation. Yet these cases are cited, not because they are exceptional, but, on the contrary, because they are typical of thousands of claims that the Association has handled; and above all because they exemplify the spirit of service-to-the-member which animates the personnel of this Association.

Insurance Follows the Car

Consider for a moment the unique service rendered in connection with claims like No. 16490, where the mishap—be it a fire, a theft or a collision accident—occurs while the member is on tour, a considerable distance from home. Wherever in Central or Northern California this misfortune may overtake him, he will

find himself within a zone of convenient communication with one of the Association's district offices. And in that office he will find someone qualified and authorized to take charge of his loss. In this way he secures immediate replacement of stolen equipment, temporary repairs, etc., without the necessity on his part of even a temporary expenditure, which might prove embarrassing for the moment. If the damage is extensive, necessitating a protracted laying up of the car, the member goes on his way, leaving the car in care of the Association, for towing or shipment to the nearest place where the work can be properly done. Ultimately the car is returned to its usual place of storage (if desired) at the Bureau's expense.

This service is available not only in C. S. A. A. territory, but also in the



CALIFORNIA STATE AUTOMOBILE ASSOCIATION

Inter-Insurance Bureau

Semi-Annual

FINANCIAL STATEMENT

June 30, 1922

Assets		Liabilities	
U. S. Liberty Bonds.....	\$ 20,000.00	Losses in process of adjustment.....	\$ 27,823.85
U. S. Treasury Notes.....	79,000.00	Return premiums due.....	1,012.75
Cash in Banks and office.....	229,077.26	Taxes accrued.....	16,603.80
Premiums in course of collection.....	58,813.96	Reserve for unearned premiums—pro rata.....	275,273.62
Re-insurance premiums unearned.....	681.97	Other items.....	1,256.28
Office improvements.....	4,944.56	Surplus over all other liabilities.....	67,516.01
Automobile equipment.....	4,069.08		
Other items.....	3,663.12		
	\$400,249.95		
Less non-admitted assets:			
Premiums 90 days due.....	\$1,750.00		
Office improvements.....	4,944.56		
Automobile equipment.....	4,069.08		
	10,763.64		
	\$389,486.31		\$389,486.31

southern counties of the state, through the courtesy and co-operation of the Automobile Club of Southern California. That Club has a system of branch offices manned by representatives whose efficiency cannot be excelled, and who are ever as eager to serve our members as their own.

This emergency insurance that follows the car—like the spare tire and the reserve tank of "gas"—is unique; and it alone would surely justify the C. S. A. A. Inter-Insurance Bureau in changing its slogan from "Savings and Service" to "Savings and More Savings."

Big Savings Annually

And the Association does save its insured members actual dollars and cents in automobile insurance premiums. That it would not be necessary to do this to justify the Association in maintaining an insurance department was conclusively proved during the two years when the rates charged by the stock companies were the same as



P. J. Walker, Director C. S. A. A. and Chairman Insurance Committee. This Committee considers rates and rules, passes on doubtful claims, and has in charge the Bureau's funds.

ours (the former being at the time at a low ebb) and when, none the less, the members' demands for C. S. A. A. protection and service resulted in substantial increases each year in the number of policies issued. However, the department is operated absolutely without profit to anyone, with the result that during this present year alone there will be an aggregate saving to insured members of approximately a quarter million dollars.

Every member is entitled to avail himself of the service, and secure his share of this big saving, and it surely behooves any who have not yet looked into this service to do so without delay. And you should bear in mind that in addition to the immediate and potential benefits here dwelt upon, your co-operation with this department will constitute added support on your part of the other departments, and of the entire Association, increasing its prestige and influence in all its various activities.

LOOKING AHEAD

What Will the Car of the Future Be?

IF LOOKING backward over the record of the motor car industry proves interesting to those who enjoy the rapid transit of today, looking forward might prove even more attractive.

Have we come to the end of the way in the development of the automobile? Or is this only a point where all is still in flux and there lies a more wonderful day ahead?

Some twenty-six years ago the motor car was exhibited at the circus as a freak. In twenty-six more will it become so much a part and parcel of the life of every man that it will be as important to the family as the house in which they live?

Subject for Jules Verne

Just about the time the automobile was coming into vogue, in 1905, there died at Amiens an author who might have been able to portray through his prophetic imagination the part the motor car is to play in civilization a generation hence. Jules Verne was very much interested in the development of the automobile and one of his romances deals with a "steam horse" which, controlled by levers in much the same manner as a motor vehicle is today, was used in traversing the wild countries of Africa.

If we place the automobile of 1896 beside the motor car of today we will find wide differences in comfort and

convenience, in durability and dependability of operation. But the design of the model of 1922 clearly reveals its ancestry and there is no missing link in the family tree. The contraption of the early days bears a strong resemblance to a wagon without the shafts, so we might even go farther back and place the buggy of 1890 beside our present-day creation.

Now with the development of the past score and ten years before us, what can we safely look forward to in the motor car?

A Long Step Ahead

The modern car is a long step ahead in the way of comfort, but has the limit been reached? By no means. We may find in another generation, after the refinements of year after year, a car as much more comfortable than the car of today as our present day coach has surpassed its predecessors.

To the layman, to the "passenger of the back seat," there often comes the idea that the designers of motor cars never take the time or trouble to try out the rear cushions of their product. There are few rear seats that feel comfortable to the back after a ride of two hundred miles, for the reason that the padding is so placed that it does not afford a sufficient brace for the small of the back. Consequently after a ride of any length there comes that

feeling of weariness due, for the most part, to this lack of proper support for the back.

Now if this were placed at an average height it would afford comfort to the average individual, but discommoded the person taller or shorter than the average. So here you find the problem that confronts the designer. Not more than two years ago there was hardly a car on the market that slanted the back seats sufficiently to provide for the comfort of the occupants. The tendency nowadays is to slope the seat upward and tilt the back forward slightly to support the shoulders. Many a well-designed back seat has proved the selling point of a car ere now and it will be looked into more and more as comfort becomes a larger factor in car sales.

Brace for the Feet

The floor of the back seat should provide sufficient brace for the feet to guard against the shocks of the road and a foot-rest is almost indispensable nowadays in these frantic times of fast going and quick stops.

Door handles for opening the doors of the car will ultimately be inset in the door itself when the designers have considered the problem. The inside handles and hooks are continually catching on dresses and coats and pockets and damaging clothes and on

(Continued on page 36)

The Call of California

[California possesses an inspiration for poet and prose writer and in its short historical span it has developed a literature distinctly its own. The works of Joaquin Miller, Edward Rowland Sill and scores of others have found their way into the anthologies of the nation's best literature. Here is a poem written many years ago by the author of the famous Mission Play that deals with the charm of California.]

Of old she called with her lips of song,
She called with her breath of musk,
From peaks where the sunlight lingered long,
And the vales in the purpled dusk;
She called to the seas with their tides of tang,
To the ships of the far-off fleet,
And they came in the lure of the song she sang,
With their white sails, to her feet.

With cheeks of olive and eyes of night,
They laughed in her glad caress,
And she gave them her Land of the Living Light
For their wandering feet to press;
She gave them her Land of the Sun and Shine,
Where the seas and the deserts part,
And they brought her their gifts of the fig and vine
And wound them around her heart.

Yet, oft in the light of the mellow moons
From the jaspered heavens hung,
'Mid the tinkle of soft Castilian tunes
And bells from the Missions rung,
She dreamed of her bounty brimming o'er
With its largess of field and plain,
And then from the sweep of the sunlit shore
Her fond lips called again.

Then forth from the toil of grudging field
And their grinding marts they fled,
While the good ship Argo sailed, new keeled,
Where the long sea journey led;
And anon through forests and wastes they jared,
Over trackless plain and hill,
And many a blood-stained trail they dared
To the voice that called them still.

They came, and she dowered with spendthrift hands,
The hopes of their wildest dreams,
And she flung at their feet the golden sands
That slept in her shining streams—
Saxon and Teuton and Celt that trod
The paths of her treasured springs,
With shoon of silver their feet she shod
And clothed them in robes of kings.

So hath she called with her lips of song,
Of old, with her breath of musk,
From hills where the sunlight lingers long,
And the vales in the purpled dusk;
And so, from her soul's unwearied love,
Rings the voice with its olden thrill;
From the seas below and the skies above,
She is calling, calling still.

JOHN S. McGROARTY.

FITTING OUT THE HOME REPAIR SHOP

A Full Equipment of Tools a Real Essential to Good Workmanship

By HAROLD F. BLANCHARD

THE motorist who enjoys doing his own repair work usually begins his career empty handed. He possesses only the scant tool equipment which came with the car, and perhaps a monkey wrench, gas pliers and screw driver borrowed from the household.

Probably the first time his car needs a little fixing he realizes that he ought to have some tool that is not in his slim kit. If he wishes to remove a spark plug, either he has no spark plug wrench or the one that he has does not fit all the plugs or it will not work in the cramped quarters surrounding the plugs—on some engines. If he wants to adjust his carburetor or his breaker points he will discover that the screwdriver that he has is the wrong size, or the handle slips on the shaft, or the edge is bent and twisted.

If he finds a loose nut the chances are two to one that the wrenches that he has either will not do at all or are not fully satisfactory. Then when it comes to doing more important jobs on the car, such as grinding the valves and removing the carbon, replacing a loose rivet in the frame, relining the brakes, and putting on small improvements here and there where found necessary he will feel acutely the need of a suitably secluded spot in which to do this work, and he will want a small work bench and a vise.

A Satisfactory Shop

In order to have a satisfactory workshop it is not necessary to go in for a lot of expensive equipment. The best rule to follow is to acquire the tools as they are needed, choosing them carefully and wisely and buying only the best. If this policy is pursued the tools will last a life time of ordinary usage whereas cheap tools are likely to give unsatisfactory service right from the start.

A middle grade adjustable end wrench may have as much as a sixteenth inch play in its jaws, thus making it practically useless for the work it should do best. It will waste an enormous amount of time whenever it is used because it is always too loose or too tight, the play in the jaws preventing a setting that is just right. You really have to use such a wrench to understand its shortcomings. The worst of it is that it may look just as fine as a good wrench but a first-class wrench of this kind will have only a trifle of play in its jaws and its cost will easily be worth the difference.

The chances are that the time you'll save the first time that you use the good wrench will pay for its extra cost.

Practically all of the hand tools purchased from time to time will be carried with the car merely as a precaution, although nine times out of ten they will be used in the garage and not on the road. One of the first jobs that must be done is to adjust the brakes. The motorist who believes in safety first is not likely to run more than two or three thousand miles without tightening his brakes. Most cars have external brakes and most brakes of this type have three adjustments; in the order named, these are: rear of band, lower half of band, upper half of band. All three are likely to take a different size of wrench, and the lower adjustment will require two wrenches of the same size if there is a locknut. Inasmuch as these nuts must be reached through the wheel spokes even a small adjustable wrench is rather awkward and wasteful of time, and therefore non-adjustable end wrenches are recommended. A little later, perhaps, two or three wrenches of the same type will be required for adjusting the valves. Adjustable wrenches may be used for this work but the non-adjustable type will be found infinitely more convenient.

Valve Grinding

When the valves require grinding it is time to buy a socket wrench which fits the head nuts. Usually it is a slow and laborious process to remove or replace the nuts with an end wrench but a socket wrench makes this job a quick and easy one. A putty knife is probably the best tool for scraping the carbon off of the piston.

A small screwdriver and perhaps a small wrench will be wanted for adjusting the breaker points, and a fine file, made especially for the purpose, should be purchased for smoothing the points.

The nuts on the chassis will require tightening every three or four months, and two or three husky end wrenches will be required for the work.

By following this method of purchasing tools just as they are needed, it will only be a few months until a full equipment of exactly the right articles is obtained. When the car is sold there is no reason why these tools should go with it. It is sufficient to include merely the tools which came with the car.

Correct Equipment

This matter of tools has been treated at length because it is useless to try to take care of a car without them. Any ordinary job of adjusting or repairing becomes a simple, easy task when the correct equipment for doing the work is right at hand. The work only becomes tedious and irksome when wrenches or tools are so ill-suited that the work progresses slowly or is accompanied by uncomfortable physical strain. At least fifty per cent of the nuts and screws on the average car are so awkwardly placed that even the best suited wrenches are none too good.

A vise is essential to the workshop. Next to the hand tools already described, it is the most important piece of equipment that can be bought. Its uses are unlimited. Whether cleaning a spark plug or overhauling an axle, it is a most welcome device, to say the least. A large vise is better than a small one, although the latter is miles ahead of none at all.

Next in importance to the vise is a workbench. It may be constructed of two by four-inch lumber and should be strongly braced. The top is best made of two by four inch material laid flat, thus making the top two inches thick. Its minimum width should be two feet and it is better to make it three feet wide. It is not advisable to make it much less than six feet long, and greater length is preferable if there is room available. It should be placed in front of a window if possible.

A Place for Tools

Any tools not carried in the car should be hung on nails along the wall to the rear of the bench while under the bench there should be a box for trash. Small tools and small parts may be carried in a drawer in the bench. Under this head may be listed a thickness (feeler) gauge, and any other gauges, breaker point file, etc.

Scrap parts saved for one reason or another may be housed in a box or bin maintained just for that purpose while there should be a box or two and perhaps three or four baking pans of assorted size for disassembled car parts. If the carburetor is taken apart, for example, its parts might be dropped into a small pan, while axle or engine parts might be placed in one of the large boxes.

A galvanized iron wash tub or similar
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There used to be a man who was seen occasionally hobbling around on crutches because a horse stepped on him. His modern counterpart is the young man with an arm in a sling after being kicked by a flivver.

NECESSITIES

We overwork the poor old bean
To get the price of gasoline.

There are two reasons why every man should have the clear-vision type of windshield: The accident records and the prevailing styles.

Phineas Shark, the eminent statistician and mathematician, estimates that if all the safety zones in the United States were placed side by side there would still be pedestrians to stand outside of them and automobile drivers who would drive through them.

There is always room for one more in a flivver. So three or four get in.

The old-fashioned woman who used to just dote on straw rides has a granddaughter now who likes to go out in a four-cylinder hay burner.

The difference between motoring now and motoring 15 or 20 years ago is that nowadays you come back.

Coal may be so scarce this winter that the people will have to burn Fords.

Dumb Dora, if she reads "The Clutch of Circumstance," will probably be surprised to know that it has nothing to do with one of the well-known parts of an automobile.

MOTOR VERSION

A man is as old
As he feels, but, zounds!
A car is as old
As the dang thing sounds.

The Los Angeles *Times* prints a story about experiments that are now under way in South America to make roads out of rubber.

Would it really work? Thrown out of a car onto such a surface one's finish would be so lingering—he would just naturally bounce himself to death.

OBVIOUSLY

His car is quite a willing cuss,

He likes it;

It seldom balks or makes a fuss,

He likes it;

But when it does you see him swear,
And rant and rave and pull his hair,
For when at times it isn't "there"—

He hikes it.

—*Detroit Motor News.*

EPITAPH

"Here lies the body of William Ray,
He died maintaining his right of way,
He was right, dead right, as he sped along,
But he's just as dead as though he were wrong."

TEACHING THE HUSBAND HOW TO DRIVE

HUSBAND—I do wish, Minnie, you'd just let me drive it a few blocks.

WIFE—Oh, all right. But if you get into trouble, don't blame me.

HUSBAND—I won't get into trouble if you don't shout at me.

WIFE—I won't shout at you. I NEVER shout at you.

(*They shift seats, husband taking the wheel.*)

HUSBAND—No, lemme alone and see if I can start it.

WIFE—Go ahead.

HUSBAND (*starting car but stalling engine as he goes into gear*)—Oh, what did I do that time?

WIFE—You big dumbbell, you stalled the motor, that's what you did! How many times have I told you not to do that? Why don't you use your

head? Let your clutch in easy and give it enough gas. Enough gas, d'y'understand?

HUSBAND—Don't shout at me!

WIFE—I'm not shouting at you; I'm only telling you.

HUSBAND—Well, here I go again. Now don't make me nervous. (*He gets car started. A truck looms up five blocks away.*)

WIFE—Watch out, now! Keep your eye peeled! Here comes a big truck ahead! Give it plenty of room! Keep to the right. Over to the RIGHT!

HUSBAND—Don't shout at me!

WIFE—TURN YOUR WHEEL! TO THE RIGHT!

HUSBAND—Don't yell at me, I'm tellin' you!

WIFE—Look out!..... THERE!..... No wonder he's swearing at you..... you nearly hit him..... WHY DIDN'T YOU KEEP OVER TO THE RIGHT WHEN I TOLD YOU TO, WHAZ-ZAMATTAH WITH YOU?

HUSBAND—Don't shout at me!

WIFE—I ain't SHOUTING AT YOU!

HUSBAND—Well, talk in a lower tone, then.

WIFE—This is my natural tone, my natural tone. LOOK OUT! You nearly hit that child. WHY DON'T YOU BLOW YOUR HORN AT A CROSS-ING?

HUSBAND—Well, don't shout at me!

WIFE—Who's shouting at you?

HUSBAND—You are!

WIFE—LOOK OUT! YOU ALMOST RAN OVER A DOG! CAN'T YOU SEE ANYTHING?

HUSBAND—Don't shout at me, d'ya hear?

WIFE—Oh, you make me sick!

HUSBAND (*stopping car*)—That ends it. I'm through. Lemme outa the car.

WIFE—Watcher gunter do now?

HUSBAND—I'M GOING HOME TO MY MOTHER. I CAN'T STAND YOUR ABUSE ANY LONGER.

—H. I. Phillips, in the *D. A. C. News*

Styles Awheel

At the top you may glimpse the latest thing in Cadillacs in a picturesque setting. It is the new Type 61 touring.

A Studebaker Special Six touring model is shown in the center picture, a model that has a large following among the motorists of the state. A number of sport features add a distinctive quality to the lines and general appearance of the car.

Lord Brougham's famous cab is recalled in the lines of the new Stephens 5-passenger brougham in the lower photograph.

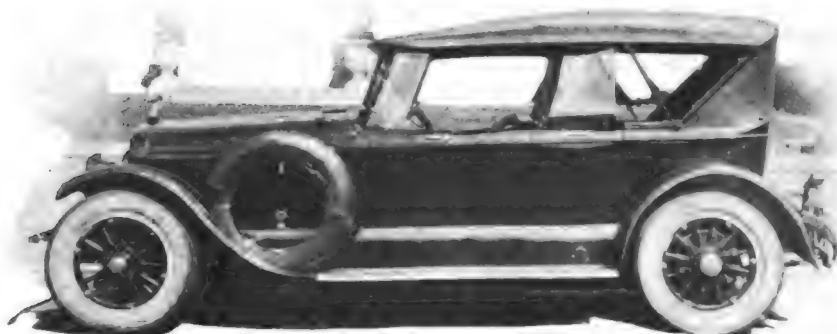
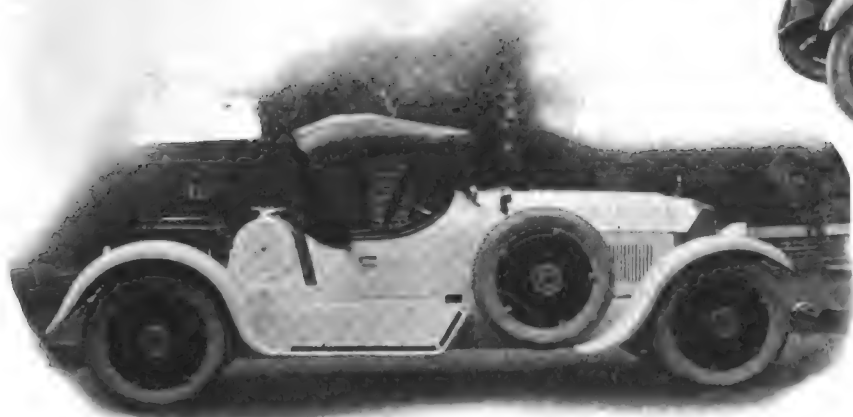


On the Open Road

A harbinger of 1922 is the Oldsmobile Twin Four 6-passenger model at the left. Below the photographer's version of the Light touring Columbia Six is shown with a Mission background.

The roadster was made for racing purposes. "After serving its time on the track the wheelbase was lengthened to 136", the gear ratio changed and a special body was contributed by Schutte. Chassis is a Duesenberg.

The car at the bottom of the page has had a great deal of publicity since Henry Ford stepped into its affairs. It is a Lincoln standard touring model.



WHAT KIND OF A DRIVER ARE YOU?

A Psycho-Analysis of the Ideal Type of Motor Car Pilot

PARADOXICALLY, the best drivers have the most accidents. Any observant motor car owner will agree that, as a class, taxicab drivers must be awarded the palm for skill and judgment in guiding a motor car. Yet they also lead in the number of accidents. Perhaps there is a connection between these two facts and perhaps not, for there is much to be said on both sides. Few private chauffeurs drive as many miles in a day as the average taxi pilot, for the good and simple reason, that no man, or woman, even were he or she so minded, could find enough errands to do or places to go to keep a car busy all day long, that is, as busy as the average taxi is in catering to the needs of customers.

The fact that the taxi driver also leads in number of accidents is best proved by stating that the yearly accident insurance which taxi drivers in New York must now carry calls for a payment of more than nine hundred dollars. It costs the average taxi driver nine hundred dollars yearly, on the average, to pay for traffic accidents in which he figures, less of course, what ever administrative expenses which must be deducted by the insurance company. Fortunately for taxicab passengers these accidents usually do the most harm to other cars or pedestrians. Probably if the thing were figured out it would be discovered that the taxi chauffeurs' high accident rate is due to his high mileage. It is likely that his mileage per accident is far greater than that of the private chauffeur or the individual owner.

In the Traffic

Regardless of how true this may be the taxi pilot excels in skill and judgment. He wriggles his car through dense traffic with graceful ease. He can drive into a space so narrow as to appall the private motor car owner. He knows to a few inches the distance required to bring his car to a stop and he gauges with baffling nicety the amount that he must reduce his speed to miss hitting a car which crosses his path. They are invariably calm, and quick-witted, ready for any emergency and alert for any opportunity which the give and take of city traffic affords. Their decisions have a hair trigger quality which permit them to maintain an average speed through city traffic that many motorists would consider good in the country.

There is good ground for believing that their driving skill is due not only to the fact that their experience is

much greater but is also due to a rather complete indifference regarding their own vehicles. The taxi is invariably provided with bumpers front and rear; at least that is the prevailing fashion. That alone lends a sense of security. In addition the majority of taxicabs are not owned by their drivers. It really makes a tremendous difference. The driver of the individually owned cab is likely to think of the monetary loss which he will experience if he has a slight collision but the driver of a company owned conveyance will not be so careful. The taxi driver, therefore, has a distinct advantage in that he has practically an unlimited opportunity to develop in skill and judgment. If he fails occasionally in the process, it is likely that he will not suffer more damage than a dented fender and what taxis are without them? The private chauffeur or private owner, on the other hand, not only spends less time driving, but the thought of damaging the car is likely to be continuously on his mind. Even a slightly scratched fender is a thing of serious consequence on a fine privately owned machine.

Embryo Oldfields

Next to taxi operators in skill must be rated a relatively small coterie of young bloods at the opposite end of the social scale. There are a limited number of wealthy young men in their late teens, embryo Barney Oldfields, who are possessed with a desire to drive as dashing as the individual occasion permits. They learn to appreciate very early in their driving career, the skill of the taxi operator. Frequently it is forced upon them by some nifty driver who noses them out of a berth by an inch or so. They resolve that it shall not happen again and soon they are onto all the taxi chauffeur's traffic tricks. The possibility of damaging the car in this educational process does not bother these young motoring scions because the expense involved in repairing the car after an error in judgment is a matter of no consequence. These daring young men sometimes equal and occasionally excel the taxi pilot, counterbalancing their brief experience against the fact that their expensive cars are usually more readily steered and are equipped with more responsive brakes.

Many of these young men, too, surpass the born and bred taxi captain, in that they are as much at home in the country as the city. Their experience does not stop at a mere 30 or 35

mile maximum but runs on up the scale to sixty or more. Occasional individuals in this amateur class greatly outshine their taxi rivals, but as a class the gasoline jehus are surprisingly expert. Their average of competency so greatly exceeds that of any other class that they must be placed at the top of the list.

Dash and Judgment

In doing so, however, the fact must not be disregarded that there is an ever widening circle of young men who can handle an automobile with a classic smoothness and competency at all speeds and in all places, and who are just as able on a steep mountain grade as on wet asphalt. Their ranks are headed by those fortunate young men, just described, who own their own cars. The best members of this swelling circle are a few years beyond their teens; rather in their later twenties. Invariably they have been bitten by the speed bug but are fairly well over it. Dash is now combined with judgment. The reckless desire to burn up the road regardless of the consequences has given way to a more mature view where skill in driving fast or slow is reinforced by an appreciation of the physical circumstances and the rights of others. These young men are observed in all walks of life. Some of them will be found in old cars which they have rebuilt painstakingly and lovingly while their more fortunate brethren will be seen piloting more modern machines of various degrees of size and excellence.

As we grow older we grow more conservative and this fact applies to motor car driving as much as it does to anything else. The man of forty or sixty years is sure to drive more carefully than the man of twenty or thirty. But the older man is not likely to be as alert as the younger one; the chances are that he will not think or move as quickly. That is one reason, perhaps, that he drives more slowly; he has to. What holds true of baseball, football, tennis or any other sport, must also obtain, although in lesser degree, to motor car driving. The older man cannot be expected to compete with the youth in his prime.

The safest driver is probably a man between thirty and forty. He must be a man who has completely forgotten the speed propensities of his youth, for when all is said and done, speed and safety are never quite compatible. He should be a driver of experience, with many thousands of miles of road mem-

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MILADY MOTORIST

By EDITH M. GARFIELD

*Adieu to the Flapper!*

The flapper fashions are joining the ranks of the dodo. Here is a trio of motor maids in the latest garb of the Fall Fashion. Note the longer skirts and the trim lines of the swagger coat and sport jacket. (Models from Abercrombie and Fitch, New York.)

IFLAPPER Fashions are on the decline! Yes, it's a fact, After a flourishing reign of many moons, they finally are doomed to join the ranks of the dodo. For some time insistent rumors that long skirts and long hair were coming to snuff out the flippant bobbed-hair type of femininity, have circulated, but the handwriting

on the wall never appeared so clearly as it did at a recent fashion show—a show so important in its influence that its suggestions are invariably accepted as law.

As manikin after manikin trailed by in long, sinuous skirts, and enormous drooping hats with trailing plumes

and veils, it became apparent that the clinging vine had once more come into its own. It seems almost impossible that the robust young woman of today, free and independent as she has chosen to be, will ever consent to be once more the delicate, drooping type that the new styles indicate, but

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TOOT YOUR OWN HORN!

A Plea for the Sane Use of the Warning Signal

THERE are various kinds of horn blowers. Occasionally a motorist will toot his warning signal so frequently and so vigorously that those who cross his path are prompted to ask, "Where's the fire?" He is at his best in heavy traffic. He uses his horn almost continuously to beg or bully the motorists ahead to pull over to the side and give him a clear path. He represents one extreme. At the other end of the scale is the motorist who does not touch his horn once a day. He passes street and road intersections, overtakes other cars, and pedestrians with never a warning note. Frequently he holds the view that horn blowing is not required of a finished driver, and that it is rather a sign of amateurishness. He believes that he is able to guide his car with sufficient skill to render the use of the horn unnecessary.

Of course, neither of these extremes is correct. The middle ground is preferable. Most motor car owners believe in their horns and employ them as occasion seems to demand, but the trouble is that the bulk of them do not employ the warning signal as often as they might. Too often is better than not enough.

Forming a Habit

If you form the habit of pressing the horn button whenever the technicalities of the situation demand it you are not likely to have even a small accident. You will be able to drive for a year on end without once getting into a jam which will quicken your pulse or bring your heart to your mouth.

When you overtake another car on the road, blow your horn. There are no exceptions to this rule. The driver ahead should always be apprised of the fact that you are about to pass him. Just as you get abreast of him he may swing toward you to avoid a small bump in the road or for a dozen other small reasons. The only safe way to avoid trouble is to "speak" to him before you attempt to pull by. If you are running fast, you should speak far in advance. Three to four hundred feet is not too much. He should be signaled, regardless of whether you require road room or not. If he has the middle of the road your signal will not only constitute a warning but will also be a request for him to move over. If you are bowling along at a forty-mile clip it is not wise to delay blowing the horn until you are within fifty or a hundred feet of the car ahead. At that distance he hasn't time to give you room until you have slowed

down. At that speed it is desirable to signal about a hundred yards distant.

At Intersections

When you are approaching a street or road intersection the horn should be brought into action. Statistics show that a large percentage of accidents occur at crossings and it is certain that the bulk of these might be avoided by habitual horn blowing. It is not wise, however, to depend entirely on the horn for safety. It is advisable to slow down somewhat at the crossing. Theoretically, perhaps, the horn should be sufficient insurance for safety. But if the visibility at the intersection happens to be bad, mutual horn warnings will not always prevent a collision for there may not be time nor opportunity, after the mutual sounds are heard, to avoid an accident, unless the speed is reduced to that demanded by the circumstances.

Another reason why full dependence should not be placed on the horn is that some cars and most trucks make so much noise that it is almost impossible for their drivers to hear a horn. Practically all solid tired trucks are so noisy that their drivers cannot hear a warning signal unless it happens to be very close by. It is deplorable that this is so but that does not alter the fact. There is no question but that a great number of accidents caused by trucks may be traced to their noisiness. Noise is a result of wear; noise is also wasted power because it takes energy to make noise. The time is coming when these things will be appreciated for their full worth. Trucks as well as all passenger cars will be designed to run quietly through their whole existence and the absence of wear will mean a conservation of power and a reduction in fuel consumption. But all that is in the future. Motor trucks of today are noisy, and so are a great many passenger cars, and this must be remembered when the horn is sounded.

Passing Another Car

If you overtake and pass another car at a street intersection, sound your horn vigorously. It is a better plan to wait until the other car has rolled by the intersection but if you must pass, sound your horn, so that he will not turn unexpectedly at the intersection and block your path. This advice is rather obvious, but it is merely preliminary to pointing out that a driveway entrance is to all intents and purposes, an intersecting street. The car ahead may swing into the next

driveway. Therefore, in overtaking a machine in the vicinity of a driveway the horn should never be neglected.

A great many careful motorists use the horn in the manner so far prescribed—that is, as a warning signal—but far too few of them employ it to announce their approach. The horn is popularly regarded as a device to clear the road of obstructing vehicles and people, but it has another function which is just as important: As the voice of the car it says, "I'm here or I'm coming, look out for me." If you approach a man who is walking along the side of the road, or if children are playing on the sidewalks, or if a motorist is maneuvering his car at the curb or running slowly beside it, "blow your horn." More children have been killed in the streets because of neglect of this precaution than any other way. In most cases the children who dash unexpectedly off of the sidewalk and cross the street only to be struck by a motor car might be saved by a little more horn blowing. The time to warn them of your proximity is while they are still on the sidewalk.

The Horn's Limitations

The limitations of the horn should also be recognized. It is not much use as a warning signal when backing up. Somehow people have never caught onto the idea that a horn may also signal the approach of a machine in reverse. There is only one way to back safely and that is to back slowly. Furthermore, in backing the eyes should always be kept to the rear. No matter how sure you are that there is nothing behind, you can never be so sure as to neglect to look back. Very slow backing is particularly necessary on city streets. You never can tell when a child, or a man, may be standing just behind your car. If you back slowly, you give the person behind a chance to get out of the way, but if you "give her the gas" for only five feet you may kill some one.

If it is always a good plan to blow your horn when you approach some one walking along the side of the road. The walker may resent your warning, feeling that you are asking him for still more road room. But when you pass a man without blowing your horn you never can tell how abruptly he may choose to cross the road.

If Your Horn Fails

In city traffic, in so far as possible, the horn should not be relied upon entirely to keep pedestrians out of the

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THE AUTOMOBILE WASH BOWL

A New Device to Clean Cars in Use in Minnesota



This isn't a "Saturday night" for motor cars, but an everyday performance at St. Paul, Minnesota

A HUGE concrete bath tub in which cars are driven round and round until their under gear is thoroughly cleaned, is the basic feature in a quick and inexpensive means of washing cars recently inaugurated in St. Paul, Minnesota.

The car owner wishing to have the running gear of his car cleaned pays a 25 cent admission fee. The attendant straps a rubber cover over his radiator and then the owner drives his car

around and around until he is satisfied that the mud has been cleaned from the under part. There are corrugations on the floor of the tank which shake off the mud as the water loosens it.

When the car leaves the pool it is given a shower bath by numerous nozzles which play upon it simultaneously; these completely remove any remaining dirt from the under body.

Adjacent to the pool are a number of wash racks with showers and here

for a small sum the owner can have his car thoroughly cleansed and rubbed down.

Many car owners prefer to drive their cars home and finish them there. It has been found possible to wash 150 cars in two hours' time on a busy Saturday afternoon.

The device is patented by C. P. Bohland and was installed by the Service Station Construction Co., St. Paul, Minn.

FUEL ECONOMY IN MOTORING

Skillful Driving Important Item in Reducing Gas Consumption

GOVERNMENT statistics are usually tiresome, but here is a fact of interest to every motor car owner: Uncle Sam says that twenty to thirty per cent of fuel now being used is wasted because of carburetor adjustments which are not as good as they might be. The trouble is that the average motorist prefers a mixture which affords maximum power rather than maximum economy. He is right in his preference; but now Uncle Sam comes along and lays it down as his opinion that the motorist is entitled to both maximum economy and maximum power.

Extensive tests by the Bureau of Mines have demonstrated that a carburetor should be designed to meet both demands. It should be equipped with a simple lever or push button having a lean and a rich setting. When running along the level and down hill the lean mixture would be used, but when climbing a hill or driving through deep

sand or mud a richer adjustment giving a powerful mixture would be employed. Since the lean adjustment would be in use most of the time high economy would be secured throughout this period and the fuel consumption would only fall to the wasteful present-day level when full power was required.

Dash Adjustments

A carburetor adjustment which may be swung from lean to rich or vice versa by the driver as he sits behind the wheel is not a usual fitting on the modern car. The Ford is one of the few cars with a carburetor which may be adjusted from the seat, and this device as it stands is neither as fine nor as effective as the government advocates. Ten or fifteen years ago dash adjustments were more common, but what is wanted is something better than any of those which have been adopted to date. The adjusting device probably should have only two

settings, one for full power and the other for full economy, and it should be fully effective over the whole range of engine speeds.

The development of such a device is a problem for the engineers of the industry, but meanwhile the motorist can obtain a considerable increase in economy by attaching an extra air valve to the intake manifold. Devices of this character are made by various concerns and may be readily attached. It is also an easy matter to make one. Simply drill a hole into the intake manifold and fit a plug cock, the larger the better. A shaft should be run from the handle of the cock through the dash board to the driver's compartment. Thus the cock may be opened or closed or set at any point in between by the driver. In running down hill or gliding along a smooth level road the cock may be wide open but when more power is required it may be closed. With this device in use the

carburetor should be adjusted to give maximum power with the cock closed.

Economy of Gasoline

The motorist whose gasoline bills are too high will find it easy to reduce them if he will but study the problem a little. By careful carburetor adjustment a large twelve-cylinder car in the hands of an average owner recently averaged twelve miles per gallon over a long distance, carrying five people and a large amount of baggage, while a six-cylinder light car with a carburetor less carefully adjusted ran over the same road with an average consumption of just a little over thirteen miles to the gallon. The big car hauled more than twice the load with very little more gasoline. Both cars were in good condition for the trip and the difference in their fuel consumption lay entirely in carburetor adjustment and intake manifold construction. The latter of course cannot be changed very readily by the motorist but great improvement might be secured by good carburetor adjustment.

Heating of Intake

Proper heating of the intake charge in order to secure perfect vaporization has a great deal to do with economy. On a certain small six-cylinder engine the power output was increased from thirty-seven to forty-five merely by installing a hot spot intake manifold. On a popular four-cylinder engine it is said that the horsepower output may be increased fifty per cent by the use of a properly designed and heated intake manifold. The improvement in economy was proportional to the power increase. Special intake manifolds are made for some cars and a great increase in economy and in power, too, will result from their use, while exhaust heaters of various kinds may be employed on other machines where it is felt that the mixture is not now being supplied with sufficient heat to vaporize it properly.

The spark should be advanced as far as possible if maximum fuel economy is to be secured. In order to secure full advance, see that with the spark lever retarded the breaker points are just beginning to open when the pistons are on dead center. Then when running the engine advance the spark all the way, retarding it only when the engine begins to knock. Be careful, too, to retard it only enough to stop the knocking.

Condition of Engine

Maximum fuel economy demands

that the engine and the whole car be in good condition. Little power losses here and there must be eliminated as far as possible. Valves should be ground and in adjustment. Valves are not likely to require grinding so frequently when the mixture is lean and the spark well advanced. If the valve adjustment is a trifle loose the valves are sure to seat firmly at all times and thus will leakage be avoided. Valves which have just been ground sometimes leak slightly because the adjustment is just a thousandth of an inch too tight. The hot exhaust gases leak out through these valves and it is only a short time until they require grinding again. If the valves are adjusted a couple of thousandths looser than directions call for, and if the mixture and the spark are right they should run a great many thousand miles before requiring regrinding.

The lubricating oil should be of a quality and consistency to give minimum engine friction. It should not be too thick or engine friction will be too high, while too thin an oil will also cause excess friction by permitting the engine parts to rub together. Oil which has been used for more than 1,000 miles is quite likely to be too thin because of its dilution by particles of gasoline which have leaked down into it from the cylinders.

Tight Piston Rings

Piston rings must be tight if good fuel economy is to be obtained. One of the best ways of determining whether the rings are good or not is to watch the oil consumption. If the engine uses much more oil than it did when it was new it is likely that it requires new piston rings. Incidentally, it is likely that the bearings will require adjusting at about the same time. The average car will probably need new rings and bearings adjusted after 15,000 to 20,000 miles of running.

Brakes should not be allowed to drag even the slightest amount, while tires should be pumped up hard.

Fuel economy, of course, also largely depends on the skill of the driver. It is quite possible for one man to average ten miles to a gallon with a certain car where another man would get fifteen miles with the same car without exerting himself, and by special effort he might readily raise the average to twenty, although the last figure could not be realized except by extreme measures and would involve operating the engine intermittently, first with throttle wide open and then with engine

shut off and clutch out. The engine runs with maximum efficiency when the throttle is open. On the other hand maximum fuel economy is secured at speeds of ten to fifteen miles per hour. Therefore the only way to realize both ideals is to operate the engine at full throttle intermittently. When the speed drops to ten miles per hour the engine is started and the throttle opened wide until the car speed runs to fifteen or perhaps even eighteen or twenty miles per hour. Then the engine is shut off, the clutch disengaged and the car allowed to coast until the speed has again fallen to ten miles.

Speed and Economy

Such methods have no place outside of economy contests and their use even at such times is questionable. The skillful driver, however, can do much to improve the fuel economy without going to extremes. For one thing the more slowly the car is operated the greater the economy. The gasoline consumption on high gear will be less at twenty miles per hour than at twenty-five and less at fifteen than at twenty.

Considerable fuel may be saved by coasting all hills with engine shut off and the clutch held out. There is no point in shutting the engine off unless the clutch is disengaged, or gear lever in neutral, because a rotating engine draws fuel from the carburetor whether the spark is on or off.

Greater economy is secured by operating the car with the hand throttle instead of with the accelerator simply because the throttle valve is held more steadily with the former. Even imperceptible fluctuations of the accelerator pedal will cause as much as a five per cent reduction in economy.

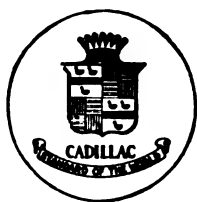
Other things being equal the driver who uses his brakes the least will obtain the greatest economy of fuel for the brakes retard the car by wasting energy of motion.

There must be no leaks in the gasoline system and full measure must be obtained. Gasoline pumps are not always accurate. Sometimes this state is accidental and then again it may be intentional. But in either case the result is the same. Sometimes changing to another gasoline pump will show a marked improvement in the gasoline consumption. There are enough cases on record, too, where fuel has been drawn from car tanks by people who would rather obtain it that way than to pay for it.



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TOURING INSPIRATION ON THE PACIFIC COAST

(Continued from page 15)

war with Mexico, the official act that made California a part and possession of the United States.

Throughout the entire state one runs up against the legendary tales of the Indians. Charles F. Lummis has done a great deal to recall the customs and language of these aboriginals of the Pacific Slope and in the Southwest Museum one of the finest collections of Indian relics in the world is housed.

Diversified Civilizations

But even the Indian civilization of the Pacific Coast was diversified. The various tribes were as distinct in their habits and manner of living as a foreign nation differs from us and whatever haunt of the Indians you seek, in Modoc, in Marin, in Mendocino, or in the southern counties, you will find a different civilization from the others you have visited.

The whole state would be thoroughly covered in a collection of Indian myths of the origins of the world. For there is not a portion of California which has not had a formative force on the Indian legends of the early days.

Then comes the period of Spanish domination and that of Old Mexico. With this come the days of the dons, that picturesque period of hospitality and colorful pageantry so well brought out in the poems of Lucius Harwood Foote. In the American Anthology we find a number of poems distinctly Californian, expressing as they do the themes which belong to the region of the Pacific Slope.

The Mission days, the travels of Junipero Serra, have left a vivid mark on the history of California and the Mission trail, El Camino Real from Sonoma Mission to the Mission of San Diego, makes an ideal automobile tour in which one may breathe much of the spirit of the old romance and learn much of the wonderful history of California.

The Days of Gold

For the days of Gold, the Days of Forty-nine, one has but to visit the

district that extends from Grass Valley and Nevada City southeast to Sonora and Jimtown. One of the best preparations for a trip to this section of the state is a thorough reading of the works of Bret Harte, for, although Bret Harte's stories are not exact as to place and his characters are perhaps exaggerations of the historical fact, he breathes into the realism of the fifties a romance that adds a great deal to the interest in the period.

Tuttletown and Chinese Camp, Sutter Creek and Amador, Angel's Camp and San Andreas, all these preserve much of the appearance of the early days and all of them breathe the very spirit of romance, the romance of the thrilling days of gold. There are still standing the iron-shuttered buildings that once housed the turbulent spirits of the early miners and the towns are mute reminders of the stirring days that were.

Historical Periods

So in California we have separate and distinct historical periods, any one of which would make motoring the more interesting through the flavoring of the realism of history with the savor of romance. You may bask in the glory of the Elizabethans and dream with Drake and his crew or you may hark back to the aboriginal day and find themes of interest in the imaginative legends of the Indian tribes. Or you may enjoy a trip through a district that recalls the Russian occupation or one that reminds you of the days of the founding of the missions and the colorful period of the dons. Or a little later in historical annals and the Bear Flag revolution and Marshall's discovery of gold and the immigrant trails bring in their pages of interest for the California tourist. All this, too, remember, lies apart from any scenic interest which the state may possess.

The increasing number of motor camp grounds established by the various towns and communities throughout the state has made motor touring the more enjoyable and has done a great deal toward popularizing of the "Call of the Open Road" idea. A motor camp

ground when well conducted and where adequate arrangements are made for taking care of the ground and keeping it in proper sanitary condition, is a distinct benefit to a community in that it attracts visitors from the ranks of whom come many of the future permanent residents of the district. Even the hotel man benefits by the motor camp ground. The motor camper often "takes a vacation" from the joys of camp and many a meal he partakes from the bill of fare of "mine host of the tavern." If there were no motor camp in the place he would move on to the next more progressive village or mayhap camp where the will seized him beside the road, along the banks of a creek, or in the shelter of the canyon.

California offers a peculiar number of advantages to the motor camper. Not only are the municipal camping grounds numerous now but the temperature, weather conditions and the thousands of acres of public domain, the many streams and canyons and mountain retreats, make it proficient in attraction. Up in the Plutonian wildness of Mount Lassen, down in the sublime tableland of the Yosemite, in the canyon of the Kings and the Kern, on the Tioga road and on the Auburn and Placerville routes to Tahoe you will find them, gypsy motorists, college professors and coal heavers, society butterflies and domestics, a cosmopolitan throng breathing the healthful elixir of the open road and finding pleasure in the primitive.

Almost every road you may travel in California is hallowed through historical association. You may pause at a turn of the road in the Sierras and look over a prospect that inspired Frémont and Carson in their scouting expedition from the Middle West. You may drive out to the Presidio and visit the first dwelling house of the state where one of the most interesting of romances had its tragic ending. Even the cemeteries have their themes of interest and the stones have tongues to unfold their tale of joy or woe. Truly, there is no other district so replete with interest as our own Coast states.





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FITTING OUT THE HOME REPAIR SHOP

(Continued from page 20)

receptacle is an excellent device for washing car parts. For convenience it is best placed on a stand at one end of the work bench, its top coming flush with the bench. If the tub is provided with a tightly fitting cover of wood or metal as desired five gallons of kerosene will serve almost indefinitely as a washing fluid.

As time goes on a breast drill will be regarded as a necessary piece of equipment for drilling out old rivets, broken studs, etc., and for attaching new equipment, or for mounting old equipment more securely. There are many uses for a breast drill.

A small soldering outfit including a blow torch will be appreciated in many ways. It is particularly useful in repairing and replacing electrical connections. Contrary to general belief any man with a little mechanical ability can solder with reasonable satisfaction provided he is willing to proceed with patience.

There are many other tools that the motorist will require according to his varying needs, such as a hacksaw, files, reamers, taps, dies and so forth.

A Tube Vulcanizer

A small tube vulcanizer operated by burning gasoline or a specially prepared cartridge in it is about the only tire repairing equipment that the average motorist will require. A power-driven tire pump is desirable and, of course, a small, portable electrically driven machine is ideal for

those who can afford it, but for the others, an engine driven pump or a spark plug pump is recommended.

Repairs underneath the car are greatly facilitated by a pit which should be about five feet deep. Great care should be exercised to have the pit dry. It should be provided with a drain, and the drain should have a sludge pot directly beneath its opening, so that dirt washed down from the floor will settle in it, rather than clog the drain passage. The pot may be an ordinary garbage pail. The screen or cover on the drain should be readily removable so that the pail can be taken out and emptied. For maximum convenience the pit should be longer than the car so that it is readily entered, and when not in use it may be covered with cross planks which set flush with the floor, although the writer prefers an open pit since it is instantly available for filling a greasecup or making a brief inspection, the which are just as important in their way as the bigger jobs.

In many respects an included runway is superior to a pit, and of course, if the garage has been built without a pit it is cheaper to build a runway than it is to add the pit. The runway may be made of planking or of structural channel steel with the channels acting as grooves for the wheels. The runway may be low, raising the car just a foot from the ground, in which case its sole advantage is that it gives you more freedom although it does

not remove the onus of working on your back. The runway may be made sloping, thus raising just one end of the car, or, if there is room, the work part of the runway may be horizontal with a sloping approach.

A very steep sloping runway which raises the front of the car four or five feet is ideal for adjusting engine bearings and other work on the under side of the engine. If the incline is very steep a block and tackle may be required to pull the car up on to it. The greatest care must be used in building the runway to make it strong enough so that there will be no danger of it collapsing when working underneath. At the same time the garage must be strong enough to permit the attachment of the tackle to the roof beams. Where its strength is not sufficient it may be braced without much difficulty.

If the removal of the engine from the car is contemplated at any time, provision should be made for hanging a block and tackle directly above the engine. There is no reason why the tackle location selected for pulling the car up on a steep runway should not also serve for lifting the engine out of the car. Unless there is ample room in the garage it is likely that the runways should be made removable so that they can be placed to one side when not in use. This remark applies at least to a steep runway, although the car may be stored habitually on the other types.

WHAT KIND OF A DRIVER ARE YOU?

(Continued from page 24)

ories to guide him safely through any emergency. He must be strong and healthy. Strength is required to whip the steering wheel around or to apply the brakes in the fraction of an instant; while health is needed as a prerequisite to remaining fresh and alert. A man's ability to drive safely varies directly with his physical condition. A surprising proportion of racing car fatalities have been ascribed to the fact that the driver in each case was at a low ebb physically, being worn out by ceaseless effort tuning up his car or perhaps by a late party the night before the race.

The Reckless Driver

The most reckless driver, on the other hand, is not necessarily the youngest nor the one who drives the fastest. Some very youthful and speedy motorists, while spectacular,

come through with surprisingly few scratches because of their youthful ability to think quickly and move surely, while some of the most dangerous drivers are also the most cautious and law abiding, as reflection will easily prove. Just as some people are constitutionally nervous others are non-alert; and the latter is a physical defect just as much as the former, although it is not so widely recognized. Beware of the driver who has this fault. Watch for him when you are practising pedestrianism and eschew his invitations to take you riding with him. He is doubly dangerous because he has the outward attitudes of the careful driver. He is a type not readily recognized unless you observe closely. Any man who has more than his just share of hard luck should be suspected of this fault. Usually he is the man who runs close

to the car ahead, and while doing so is unlucky enough to take his eyes off of the road during the very instant that the car ahead suddenly slows down. The result is four crumpled fenders, two on each car. He, also, is the man who does not always look to the rear when backing his car. When he *knows* there is nothing to the rear he is not likely to look, and periodically, thereby, he gets into trouble. Occasionally he bumps a pedestrian because he didn't see him in time and he is quite prone to be almost astride the rails at a crossing before he notes that the crossing is there.

Among dangerous or unsafe drivers must also be listed certain people of very nervous temperament who are likely to quaver in an emergency. They should endeavor to make extra caution a habit.



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8:30 a.m.	4:20 p.m.	8:00 a.m.	3:40 p.m.
9:00 a.m.	4:40 p.m.	8:30 a.m.	4:00 p.m.
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The Woman Who Drives

Women as a rule must be regarded as safe drivers because they are instinctively more cautious than men. Usually they proceed slowly and they break very few rules. The woman speeder is the exception. But the small, frail woman demands special consideration when she sits behind the wheel of a motor car. If the brakes are not in the very best of adjustment her strength is not equal to stopping the car with reasonable celerity and this situation is often complicated

by the fact that the pedal is so far away that she cannot manipulate it without becoming a contortionist. Special cushions, and pedals that are longer than usual are quite necessary in addition to having the brakes in the very best of shape. The steering gear, too, should work easily. This merely means that all parts should be carefully lubricated and the gear should be kept in the best of adjustment, and the front tires should be inflated to their normal rating because soft tires make hard steering.

The ideal driver, unquestionably, is the one who always drives safely, and yet with such grace and smoothness that his companions are only barely conscious of it, and with such skill that he obtains the most from the machine at the smallest cost to its mechanism. He should be able to press his machine over the road at good speed when a high average is demanded and at the same time he should have the qualities necessary for skillful maneuvering in dense city traffic.

TOOT YOUR OWN HORN!

(Continued from page 26)

path of the car. When a man crosses the street in front of your car you should have it sufficiently under control so that you are able to avoid him if the horn fails. The chances are that it won't, but what if it does? If your horn does go back on you, you will stop abruptly or steer out of the way. On the other hand, if it works, and probably it will, the pedestrian will get out of the way and let you roll by without deviating from your path or slowing down any further.

In blowing the horn, especially in thickly populated sections, sound it far enough in advance, when possible, so as not to startle the pedestrian. If you wait until the very last moment he may jump in front of the machine in his confusion. Whereas if he is warned soon enough he will step out of the way without becoming panic-stricken.

The Horn Listener

Be a horn listener as well as a good horn blower. If you want the other fellow to respond quickly to the message which your horn gives, you should also be alert for the horn of every motorist signaling to you.

The modern horn is a marvel of reliability. It gives very little trouble compared with the horns of a few years ago, but it is advisable to know a little about the things that may cause it to fail and how they may be remedied. If the horn won't blow, hold the button down and then short circuit the wires at the point where they enter the horn. If a spark is obtained it shows that the wiring is all right and that the trouble is in the horn. If no spark is observed, the trouble is in the wiring or the switch button.

Examine the wires very carefully for worn insulation which might permit a short circuit. Any suspicious places should be taped. See that the wire terminals are not corroded and that the wires are fastened tightly to them. Then if a spark cannot be obtained at the horn terminals the trouble must be in the horn button switch or the battery must be run down. If the defect is in the switch, it should be revealed by disassembling the switch and examining it carefully.

Motor driven horns sometimes refuse to go because their bearings require lubrication or the commutator needs cleaning. The horn should be taken apart, the commutator wiped dry and the bearings oiled with a little vaseline. If the commutator is very dirty it may be advisable to clean it with some fine sandpaper.

MILADY MOTORIST

(Continued from page 25)

still, the exaggerated size of the hats, the almost unbelievable length of gowns and hat trimmings, are not exactly conducive to the wild scamperings indulged in formerly by our pert *jeune fille*.

It is obvious, that after these extreme styles have become modified a trifle to suit more moderate tastes, they will still tend to the development of the "sweet young girl," who is coming to take the place of the boyish, but adorable, flappers that we have gossiped about so strenuously.

It would be interesting to know just how extensive the influence of clothes is upon the character and personality of the wearer. Of course Shakespeare said something about clothes proclaiming the man, and it is a little bit trite to mention the time-worn bromide about clothes lending self-confidence, or vice versa, but it is possible that aside from that, there is an undeniable influence. It would be enlightening if

we knew whether the free and easy clothes of the flapper encouraged the free and easy manner, or if the growing feeling of confidence and independence and all the other attributes that have been so widely discussed, caused the flapper to demand clothes that would become a badge of her new emancipation (to put it rather strongly).

If that is the case—if she selected her garments with a careful eye to mannish detail and flamboyant effect, —what does this return to the "clinging vine" type mean? Does it mean that the flapper is tiring of her fame and reputation as a "new woman"? Is she just a little bit ready to assume again the garments of extreme femininity, and step back into the role of the "sweet young girl"?

No! Certainly not! The flapper will remain! She is not a passing ad. for fancy. She is merely undergoing a new development, and after all, the clothes mean little in her life.

With all this talk and prophecy of trailing skirts and outrageously large hats, it is undeniable that we have reached the age of discretion to the extent that we will not be coerced back into garments that hamper our movements, and make us uncomfortable. If it is found that these new styles are going to be a burden and a discomfort, the flapper is going to discard them in favor of clothes that do meet her fancy. But a happy medium between the short, simple and perhaps, to some minds, shocking raiment of yesteryear, and the ultra-feminine garments of tomorrow, is bound to be the result, and with that in view, it isn't hard to accustom ourselves to any freak of fashion.

We're too sensible to be led back to the ridiculous days of bustles, padding, and skirts that trail in the dust, and our sense of humor won't permit us to step unthinkingly into fashions too extreme.

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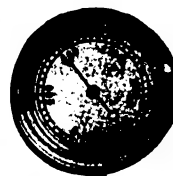
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LATHAN AUTO SUPPLY CO., Manufacturers

Made in San Francisco

LOOKING AHEAD

(Continued from page 18)

a trip of length they prove an inconvenience.

Car tops are no longer the funny man's meat. Few persons drive with the top down nowadays and the present day tops are really one-man affairs, at that. The first "one-man" tops that were turned out usually took the whole family and a few of the neighbors to install in position properly.

Curtains provide another problem. Great improvements have been made in the design of this necessary equipment of the open touring models. But one cannot help longing for that day when the putting up of the curtains will be the task of two or three minutes instead of the worry of half an hour.

Labeled Curtains

Every curtain should be labeled with the place where it belongs and many are now being turned out that way. It does not add a great deal to the expense of manufacture to indicate the position they should occupy.

A driver used to dread the time he

would have to put them on or practiced a few times at home so as not to be too conspicuous an object of woe on the road. At any rate the present day curtains which open with the doors and stay somewhere near the place where they were intended to stay are a distinct improvement on the earlier design.

Headlights are still on the way to perfection. Legislation has done little more than muddle up the problem, and the deadly glare of night driving is still with us. There is a great field open to some inventor who will devise a scheme for adequate lighting without glare, not only in a beam well ahead of the car but immediately in front and along the edge of the road as well. There have been some great improvements made in this line but the ideal has not been encountered as yet.

Tire Changing

Tire changing on the road has been done away with to a great extent by the improvement in tires and the labor-saving equipment with which almost

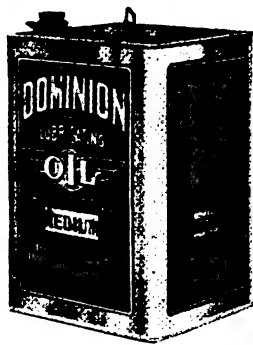
every motor vehicle is equipped nowadays, yet it cannot be said that the ultimate has been reached in this line. How many times has a poor, ordinary driver sat in the speedway stands and watched a racing crew change a tire in fifteen seconds or so, and murmured a hearty wish that he might be able to do the same thing when a puncture caught him unaware on the open road.

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The car of the future generation will have great ease of acceleration, for traffic congestion will compel this. It will be economical, the motor will be silent, and the exact temperature of the engine and the working parts will be ascertained by a glance at an instrument on the dash.

The carburetor will be controlled from the dash and will not be such a matter of mystery as it is today. Vacuum tanks will be perfected or some newer device developed to insure proper circulation of fuel at all times. Gear shifting will be easier, and will be made fool-proof. There will be no danger of stripping gears on the car of the future.

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Of MOTOR LAND, published monthly at 1628 Van Ness Avenue, San Francisco, California, for October, 1922.

State of California, } ss.
City and County of San Francisco.

Before me, a notary public in and for the State and county aforesaid, personally appeared Mary Bates, who, having been duly sworn according to law, deposes and says that she is the business manager of MOTOR LAND, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:
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2. That the owners are: California State Automobile Association, Inc., 1628 Van Ness Avenue, San Francisco, California. President, George S. Forderer, 289 Potrero Avenue, San Francisco, California; treasurer, Edwin F. Merry, 200 Van Ness Avenue, San Francisco, California; secretary, D. E. Watkins, 1628 Van Ness Avenue, San Francisco, California.
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Sworn to and subscribed before me this 22nd day of September, 1922.

MARY BATES, Business Manager.

(Notarial Seal)

PERCY E. TOWNE, Notary Public in and for the City and County of San Francisco, State of California. (My Commission expires February 9, 1924.)

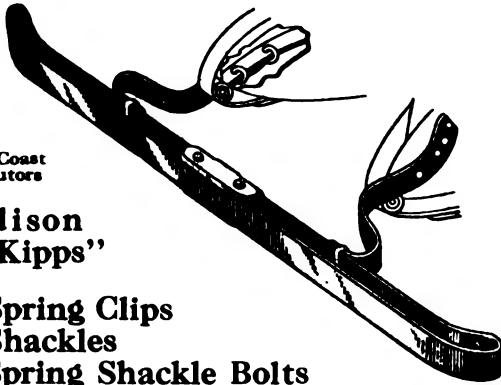
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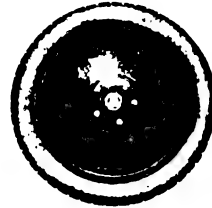
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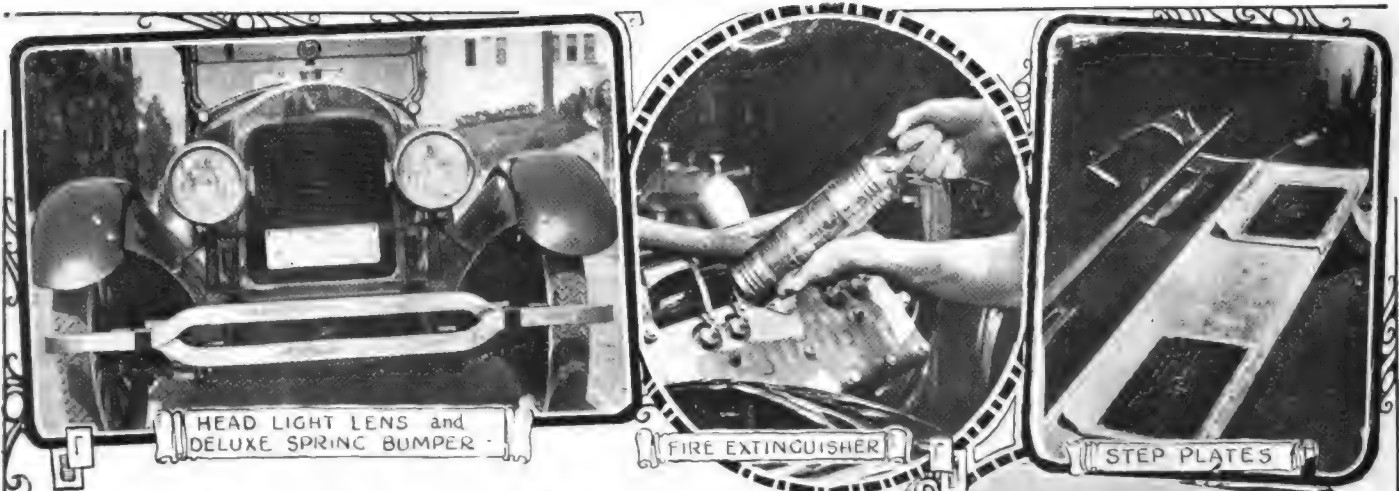
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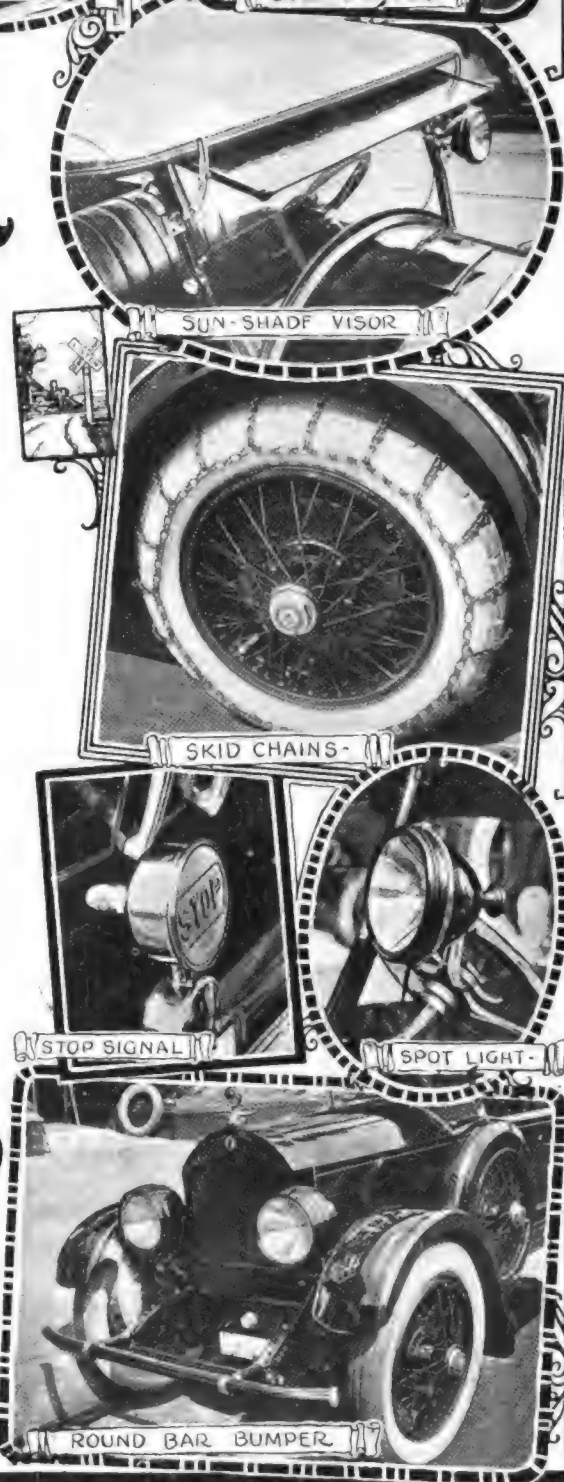
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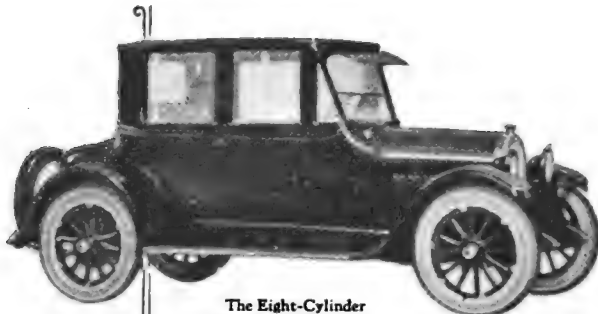


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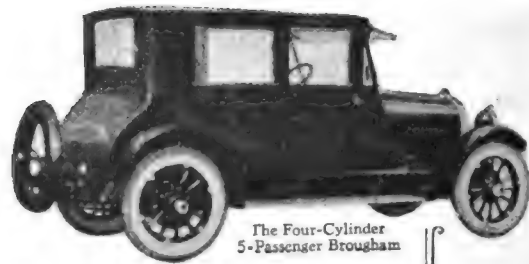
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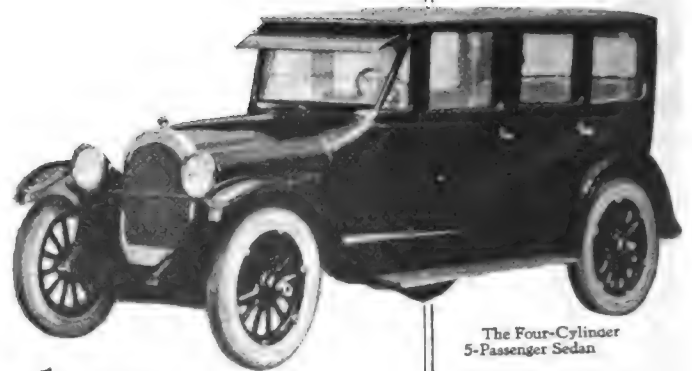
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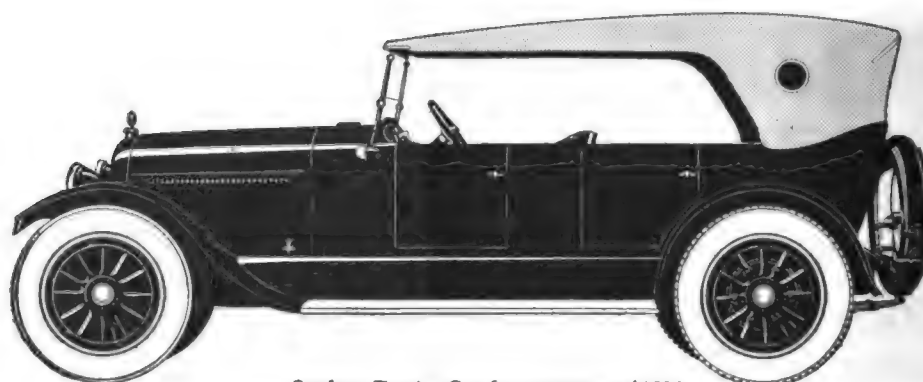
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Volume XI

NOVEMBER, 1922

Number 5

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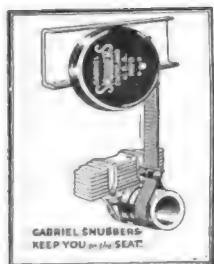
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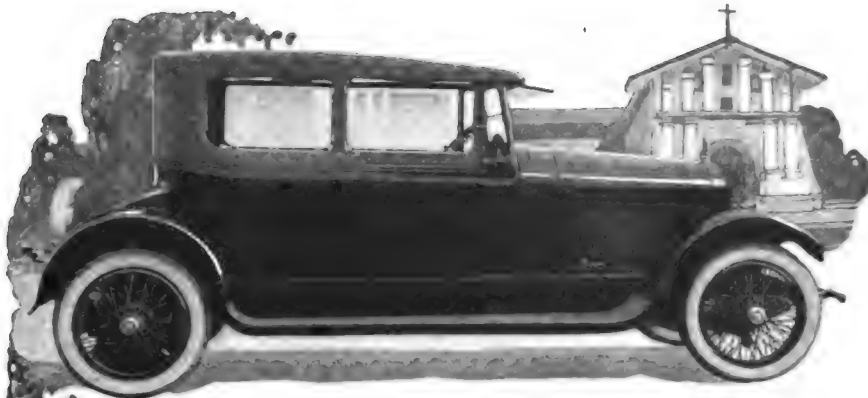
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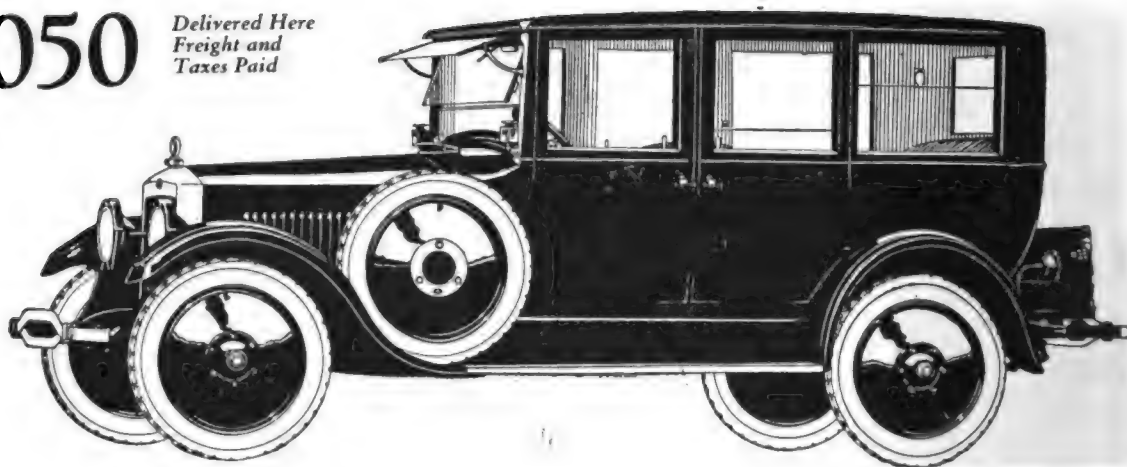
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The most minute and detailed examination of the design, material and workmanship of the body of this new model will not disclose any difference between it and the most high grade and expensive custom built bodies.

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"This Is a Studebaker Year!"



CURRENT COMMENT

A Continuous "Safety Season"

CARELESSNESS and ignorance in the driving of motor vehicles is the reason given by the Highway Education Board for the appalling list of killed and injured established by automobiles during the last twelve months. Twelve thousand five hundred persons were killed and three hundred and fifty thousand received minor or major injuries in this period.

"Safety First" drives accomplish a great deal, but their effect soon wears off, the "patient recovers" and the "medicine" must be administered again. In this day of constantly increasing traffic congestion our "Safety season" must be continuous. The dangers of one day are as great as the next and if we, as motorists, are to avoid the drastic legislation that always follows in the wake of an aroused public sentiment, we must ourselves lend a hand in this campaign for the education of pedestrian and motorist as well.

Good old Samuel Johnson said: "We cannot prove any man's intention is bad. You may shoot a man through the head, and say you intended to miss him; but the Judge will order you to be hanged. An alleged want of intention, when

evil is committed, will not be allowed in a court of justice." So it is with the motorist who runs down a pedestrian or collides with another motorist. The evil has been done, whatever the intention, and only extreme care in the manipulation of the vehicle and an obedience to the law can prevent the occurrence of such mishaps.

Drive down the street today and you will witness a score of traffic violations in as many blocks. A wrong signal, a cut corner, a careless swing of the wheel—many a life has been snuffed out by these everyday mistakes in the centers of traffic.

He who drives a motor car must be fully cognizant of the fact that he has under his control a thing capable of great harm as well as of great benefit. He must use it carefully; he must be fully awake to the duties of his position and the rights of his fellow man; he must be courteous; he must give his full attention to the matter in hand. When the driver of a motor car realizes the tremendous responsibility that rests on his shoulders, he will be more and more careful and there will be a consequent reduction in the accident toll of the country.

Prosperity Shown by Automobile Industry

WHAT do you suppose you would have to pay if you wanted to corner the market in automobiles? Just eleven billion dollars, that's all. This year will add just about 1,200,000 new cars to the motor car roll call, and the grand total stands somewhere about 11,300,000.

If you want to form an idea of how the motor car industry is growing, just hark back to 1915 and the registrations tell us there were 2,445,664 cars in operation. In six years' time the automobile industry has added about eight million cars to its lists. Saturation point at hand? Not so you could notice it.

Citizens of the United States like to ride around in motor cars. There's a car for every ten persons now. There'll be a

car for every five ten years hence. There's plenty of room for car making yet. Then think of the cars that visit the junk heap after having served their time of usefulness and you may see that the hour when the tools of the car builders will be useless is far, far away.

Prosperity? September set a new monthly production record. This is the fifth time the record has been broken this year. A thirty-one per cent increase over last year was recorded. The ownership of an automobile is a sign of prosperity, so perhaps the country isn't going to the dogs as fast as some of our leading pessimists would have us imagine.

Choosing the Combination Car

Shopping for a Satisfactory All-Year-Round Machine

By WILLIAM ULLMAN

DURING the past few years, probably no problem has puzzled the prospective automobile purchaser of limited buying power so much as deciding which type of car would be more desirable, the open or the closed model.

This long and much-mooted question is now answering itself with the appearance of a new type of car which is bounding into popular favor among motorists everywhere—whether they hold forth in the arid Southwest, the rain belt, the land of always-blooming flowers, or the regions of ever-blowing chill winds and snows.

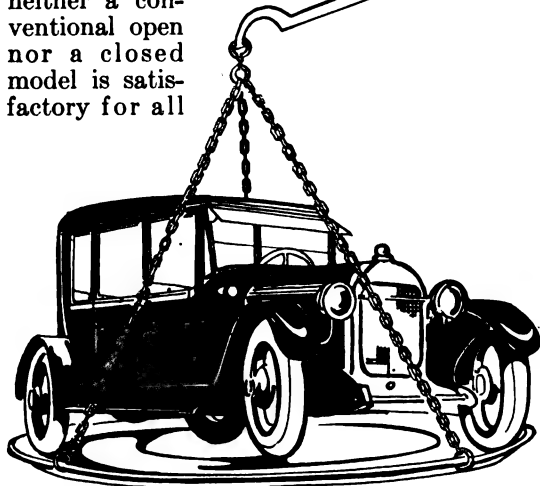
Naturally, the average man who can afford to own only one car at a time desires to obtain maximum use out of what he buys. But he has realized that neither a conventional open nor a closed model is satisfactory for all

couraging the production of the combination car. With these in mind the shopper is better able to select exactly what he wants.

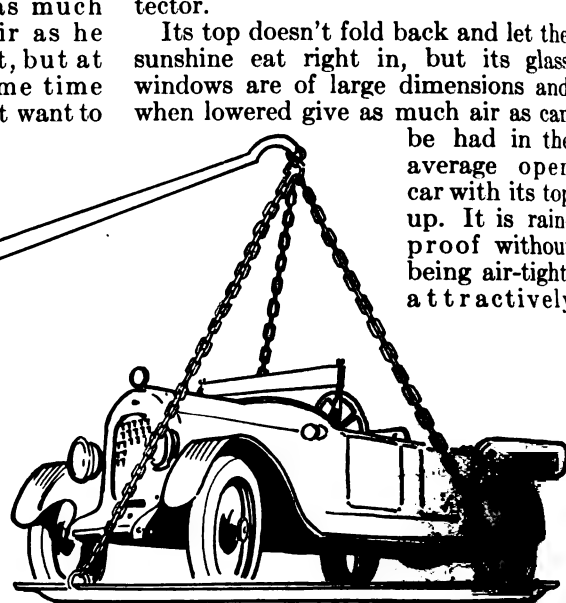
The new type takes into account the fact that the average man who drives wants as much fresh air as he can get, but at the same time does not want to

the elements as to be fresh-air proof. It is not the sort of car "James" would care to drive you home from the opera in some cold evening, but chancing to be in this car on a freezing night you would find it a most satisfactory protector.

Its top doesn't fold back and let the sunshine eat right in, but its glass windows are of large dimensions and when lowered give as much air as can be had in the average open car with its top up. It is rain-proof without being air-tight, attractively



struggle with the elements when they are in an off mood. He does not want to sit in the lap of luxury, but neither has he any inclination to weather rain, snow, sleet, wind and hail if it isn't necessary. The trouble has been right along that unless one were fortunate enough to own two automobiles, the open car was frequently too close to nature and the closed one was too far from it.



purposes, and has long recognized the need for something combining the advantages of the two. At any rate, he is now being offered what he wants.

The Combination Car

It is known, depending upon the particular manufacturer's ideas, as the coach, the cabriolet, cabriole, business coupé and so on, but regardless of its specific appellation it is the combination car.

The difficulty in shopping for this model is in knowing just what features of both open and closed cars it ought to include, and which of the various offerings on the market come nearest to the ideal.

Certain standards of measurement are necessary; and the first consideration is to understand clearly what facts have been instrumental in en-

Each Has Its Place

The conventional closed car has its logical place; the open car has its niche as well. But if a motorist is limited to one type, he is pretty certain to be wishing he had the other before the year is out. Those who drive both open and closed cars are in a better position to speak of the advantages and disadvantages of the two types, and their opinion is invariably that each has its place according to the season and the weather and that neither one is an all-year-round type. It is because of this that they drive two cars.

It was only logical, then, to develop the combination car for the needs of the average man. It is a car that is not so heavy as to increase operating costs, not so luxurious as to make the driver feel that he is still sitting in his easy chair, not so hermetically sealed against

upholstered without looking impractical for daily use, snug enough for the coldest day, yet appropriate for a summer picnic.

Slight Increased Cost

Not only this, but the new combination costs only slightly more than the conventional open car, thus giving the buyer the advantages of two cars at slightly more than the cost of one. In addition, the buyer is able to enjoy more use of such a car than he would be able to with either a conventional closed or open model. More complete use of a car means saving on other forms of transportation, or virtually motoring more for less money.

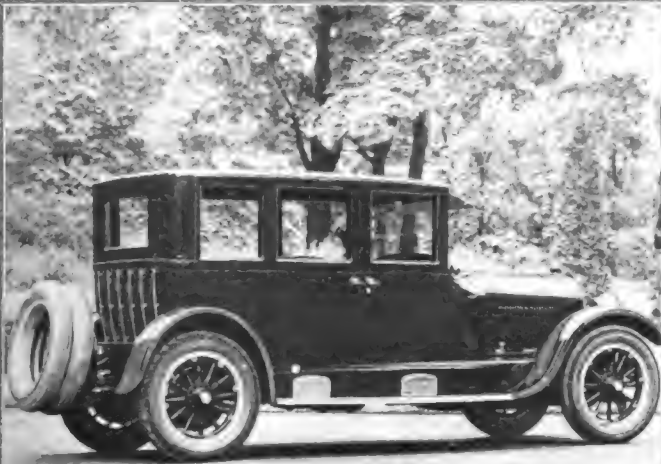
Quite a number of manufacturers are now offering this combination job, or are about to do so. It is safe to predict that before very long every maker of cars within the one-thousand to two-thousand-dollar class will be marketing it. The competition has already brought about some improvements which are needed to make this type as nearly suitable for all purposes as possible. The interesting point of it is that these changes are really the addition of more of the open car's features. For

(Continued on page 15)



Combination Cars for all Purposes

The new Oldsmobile coupe is shown on the left. A Cadillac 5-passenger sedan and a Don Lee custom-built Cadillac coupe appear in the center. Below, the latest Stephens offerings, the new 4-passenger brougham on the left and the standard 7-passenger sedan.



For all Weathers

Here is a quintet of enclosed models to delight the eye of the motor buyer. At the upper right is the Studebaker "Big Six" 4-passenger coupe. The latest enclosed model of the Buick is shown at the left center. Below it is the Jewett and to the right is the Paige. The Columbia sedan model is shown at the lower right.



example, there is the question of visibility. The open car has always been the safest to drive because of the almost total absence of vision obstructions. The motorist who enjoyed this advantage was naturally not pleased with the wide door and window panels which characterized the first edition of the combination car, but he finds no complaint on this score now that visibility has been so materially increased. As a matter of fact, the visibility of the combination product is far in advance of that of the curtained open car.

The interiors are being upholstered in leather or dark cloths rather than gay fabrics, for it is realized that the combination car is required to have closed-car features only as a means of protection against the elements—not as a means of lolling in luxury. It is designed to stand as much wear as an open car receives, and there must also be a convenient place for the tools as well as adequate accommodations for luggage.

In buying this all-year-round car at slightly more than the cost of the open

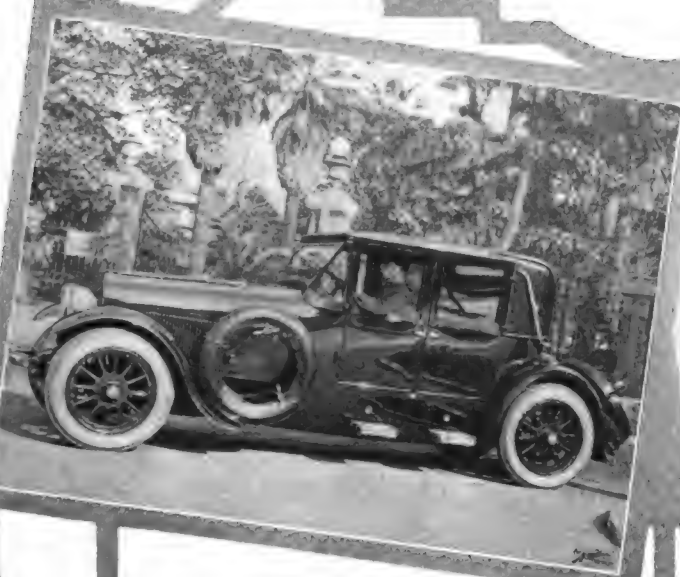
phaeton, the motorist should expect only the essential advantages of the closed machine and not the frills. The main point is to see that the car is weather-proof without being a cage.

If it is almost as airy as an open model and about as cozy as a closed car, it is the ideal buy for the man who can afford only one automobile at a time, and who aims to get the maximum amount of comfort and service out of his purchase.

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Knights of the Road

Below, the four-cylinder Durant sedan and coupe. At the upper left a Murphy custom-built 4-passenger sedan, Lincoln chassis. On the right Studebaker's latest product, a "Big Six" speedster sedan.





From summit of Moro Rock a magnificent view of the Sierras is obtained

Sequoia National Park

Visiting the American Switzerland of the High Sierras

By JOHN R. WHITE

Superintendent of Sequoia and General Grant National Parks

MOTORISTS want facts. Facts and figures on roads, distances and accommodations are especially desired by those who point their radiators to the mountains. Yet too often they are overwhelmed by adjectives and superlatives about the scenery while reliable facts and figures are hard to obtain.

Now it will be difficult to write about the Sequoia National Park without attempting to convey some idea of its charming forest and mountain scenery. But I'll try. If here and there a word or two of description creeps in among the facts and figures that you crave, it will be because no man could live beneath the mammoth trees without wanting to share his appreciation of them with all mankind.

It will be news to many of the members of the California State Automob-

ile Association to learn that the most accessible forest of Big Trees (*Sequoia gigantea*) is found at Giant Forest, in the Sequoia National Park, only 29 miles from the end of the concrete highways of the San Joaquin Valley.

Giant Forest, summer headquarters of the park, is 276 miles from San Francisco, all of it but the last 29 miles by concrete highway, via Oakland, Hayward, Tracy, Modesto, Merced, Madera, Fresno, Visalia, Lemon Cove and Three Rivers. And the last 29 miles, from Three Rivers to Giant Forest, is over a good dirt mountain road with an average grade of from 8 to 10 per cent and occasional stretches of 15 per cent. How good this road is may be judged by the fact that over five thousand automobiles entered Giant Forest by this route during the season of 1922; and the cars ranged

from flivvers of the lightest to limousines of the heaviest types.

Control Is Maintained

A control is maintained by the Park Service on the Giant Forest Road, not because the road is dangerous but because experience has shown that auto travel may best be handled on schedule, that a control may be so arranged as to meet 99 per cent of the demands of visitors and that 100 per cent of motor tourists appreciate a dust-free journey with no contrary traffic on a mountain grade.

Broadly speaking, the control operates on a long up schedule leaving Kaweah (4 miles above Three Rivers) any time between 4 a. m. and 1 p. m., and a short down schedule leaving Giant Forest any time between 3 p. m.

(Continued on page 18)

To a Sequoia Forest



*Teach me your strains, O morning stars
that sang
When all the Universe with rapture rang;
Lend me your harp, Apollo, that its strings
May give unto my singing golden wings;
And tune my tongue, Saint John, to speech
that slips
Like song down that divine apocalypse—
Then might I be your proud evangelist,
O redwoods, earth-enthroned and heaven-kissed!*

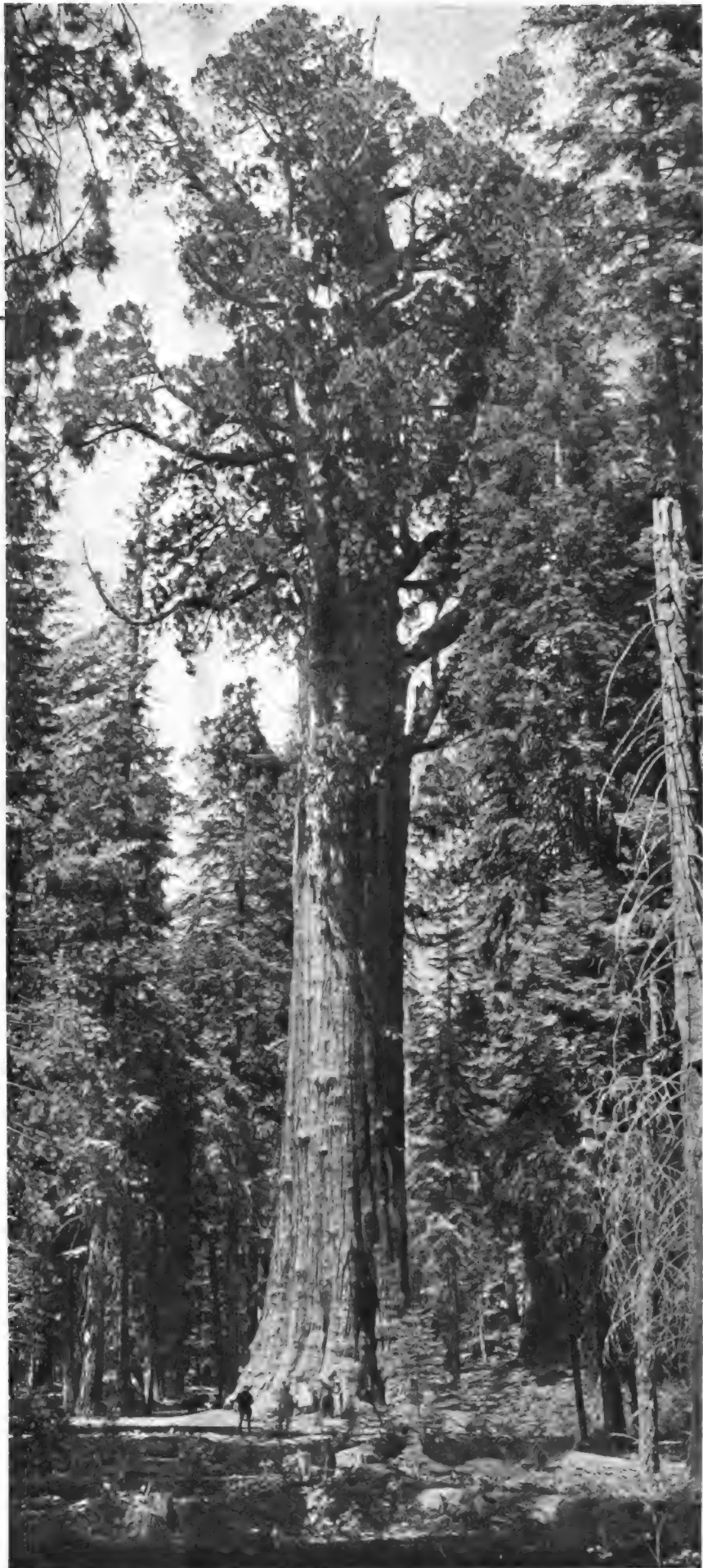
*In every giant trunk an epic lies;
A psalm in every branch that scales the skies;
Odes in each bough and idylls in each spray,
With leafy lyrics sung by sprite and fay;
Day-dreams that through your twilights deftly
run
Of elfin gold and gossamer and spun;
But night brings visions, some with signs astir
That need a Daniel for interpreter.*

*But oft one needs no gift of sage or seer
To read majestic truths that cluster here—
A scheme of grandeur decked with loveliness
That gardens of the gods might fain possess;
The arts of patience, strength and fortitude
Exemplified in one grand interlude,
And that great gift of love, the grace of God,
Abounding in the sky, the wood, the sod.*

*What mighty monuments of ancient time,
Yet green with youth! O miracle sublime!
With vastity of tongues you speak to men
Of days almost beyond all human ken;
Of lands and seas of which old Homer sings;
Of saints, apostles, prophets, priests and kings
Whose names are dim in Clio's diadem—
When they were here on earth you lived with
them!*

*Imagination droops and Art despairs—
Oh for that tongue that harps celestial airs
When, gazing far into your turrets green,
I contemplate what ages lie between
The tiny seeds and your majestic forms,
Survivors of great earthquake shocks and
storms;
The grandest monarchs Time has ever known,
You link the primal ages with your own!*

—Clarence Urmy.



General Sherman Tree, Largest in the World, Sequoia National Park

Sequoia National Park

(Continued from page 16)

and 5 p. m. There are special controls for week-ends and holidays. The schedule time between Kaweah and Giant Forest is two and three-quarter hours.

Motorists have frequently driven from San Francisco to Giant Forest in a day, but the average driver will want to break the journey, and excellent hotel accommodations are to be had in all the valley towns and also in the foothill village of Three Rivers, beside the brawling Kaweah River at the end of the concrete highway.

Accommodations at Giant Forest are available to suit all tastes and purses, from comfortable wooden cabins with board at \$5 a day down to house-keeping tents at from \$25 to \$40 a month. Saddle animals, donkeys, and pack mules may be rented by the day or for long trips into the Kings or Kern canyons.

Giant Forest is becoming every year more popular as the jumping-off place at the end of the automobile road on to the mountain trails that lead into the American Switzerland of the High Sierras. However, instead of putting it that way it would be better to call Switzerland the European Sierras, for the little mountain republic must yield in scenic charm to that tumbled mass of crags, glaciers, canyons, lakes and streams which stretches two hundred miles from the Yosemite on the north to Sequoia at the south.

A Different Holiday

If you really want a holiday that is different and which embodies opportunities for physical refreshment and scenic satiety beyond anything on the Continent, go to Giant Forest by motor, leave your car there, rent a burro or two, pack your camp outfit on the long-suffering donkey and hike, hike, hike, first through spicy glades beneath the oldest and largest living things on earth—the sequoias; then on through meadows where the cyclamen and hellebore reign supreme over a myriad other flowers; on, ever on and up, to the silent forest of lodge-pole pine where every little creek and lakelet tucked away among the mountains will yield the limit of rainbow or golden trout. And so ever on and upwards to the place where the trails run out and stop above timber line and you may stand entranced beneath the “violet peaks uplifted to the tender evening sky.”

Stop! This article was to contain facts, not descriptions. So we will descend from the rhetoric of violet peaks to facts about the humble burro and state that he can be rented for \$9 a week and that there is a record of

four men taking a week's outing in the High Sierras with all their grub and blankets packed on one burro.

The real way to see the mountains is by the burro trail. Hundreds of people did it during the past season; and they

do some shopping on Washington Street.”

And in the Kern Canyon I met a well-known Los Angeles physician with his two small boys, aged eight and nine, who had been to the top of Mount



Automobiles awaiting the down control on Giant Forest roads

were not experienced mountaineers, but many of them city bred and reared. Contrary to the general belief, there is nothing supremely difficult in the art of packing an animal. You may not be able to learn the “diamond hitch” in one lesson; but you can acquire the “box hitch” in a few minutes’ instruction and get there just the same. One of the most vivid pictures which I brought back from a two-weeks trip in the High Sierras was that of two girls from Boston whom I met near the timber-line and Mount Whitney, some 12,000 feet up in the air and several days away from autos, roads, movies and the other appurtenances of civilization, in the year 1922. They had been in the mountains for over two weeks and had traversed the High Sierras through Kings Canyon, over the John Muir Trail, Carbridge Pass, Glenn Pass, Junction Pass and Shepherd Pass. They were brown and happy, and the only mischance of their journey had been that they wore out their shoes and had to drop down a few thousand feet over Kearsage Pass to Independence to buy new footwear. And they spoke of that as naturally as they might have mentioned taking “the subway down town in Boston to

Whitney and over half a dozen mountain passes from 10,000 to 13,000 feet above sea level. The only thing the doctor seemed worried about was the prodigious appetite of the boys, who thought nothing of starting the meal with a dozen brook trout and finishing with as many flapjacks.

Accessible in Winter

It's a great country—the High Sierras. And it has a great gateway at Giant Forest in the Sequoia National Park. Residents of San Francisco and the bay region are realizing more fully every year that the finest mountain region in the state is found in this park and in the adjacent regions which, it is hoped, will soon be included in the national park system by an enlargement of the Sequoia National Park under the name Roosevelt-Sequoia National Park. A bill for this purpose is now before Congress and will undoubtedly pass next session.

And before we end this list of facts and figures, interspersed with a little description, please note that Giant Forest is the only place where the Big Trees (*Sequoia gigantea*) may be seen in winter. They are reached by the

(Continued on page 40)

Reviewing The Year

The Activities and Accomplishments of Organized Motordom During 1922

By D. E. WATKINS
Secretary-Manager California State Automobile Association

IN MAKING my Annual Report, I will review the accomplishments of the various departments of the Association for the past year separately, and in so doing feel that a better understanding may be had of our activities.

In reality the California State Automobile Association is the parent organization of seven distinct sub-organizations, each in itself a business that every member may feel justly proud of supporting.



Secretary-Manager D. E. Watkins

These sub-organizations are recognized as our Insurance Department, Engineering and Map Making Department, Good Roads Bureau, Legal Department, Magazine and Publicity Department, Touring Bureau and Membership Department.

In looking back over the records of the Club I find in my Annual Report for the year 1915 we then had 7 employees, in 1918 the number had increased to 40, while in 1920, two years later, it had increased to 123 men and women. Today, I might advise, we have over 200 employees giving their entire time to our work and operating daily, for official use, 58 automobiles, all of which best bespeaks our healthful state, increased service and enlarged activities.

The Club's membership for the past year has been increased and while this increase is not as great as we would like to have had it, nevertheless when we consider the business depression that has existed, particularly in the automotive industry, in conjunction with the fact that our dues were increased 33 1/3 per cent one year ago, I believe you will appreciate the progress made. A new district office was opened in Marysville during the past year and within the next two or three weeks one will be opened in Merced, thereby making the total number of district offices thirteen, all of which are operated by our own employees, giving of their undivided time to the work of the Association. In addition to these district offices we have seven touring bureaus where the member may receive up-to-date touring information.

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Touring Bureau Service

The Touring Bureau printed and distributed during the past year 307,500 maps, an increase over the previous year of 135,757.

In an endeavor to portray to you the magnitude of this one activity I might advise that if these maps were placed end to end in one continuous line they would cover a distance of 43.6 miles. The members should also consider that these maps are distributed personally by the employees of this department and are not given in sets to members when joining or distributed in quantities through other channels.

Motor tourists to the number of 225,000 were served with maps and road information by our main office and the twenty-one touring bureaus and branch offices during the past twelve months.

The branch office maintained in Yosemite Valley during

Looking Forward

Plans for 1923 C. S. A. A. Development Outlined by President

By GEORGE S. FORDERER
President California State Automobile Association

IT DEVOLVES upon your President to outline briefly the plans of the organization for the coming year and to express his appreciation for the unselfish coöperation of the Board of Directors, the Membership and our Executive Officers. If the results obtained during the past year show achievement of purpose our success can only be attributed to this loyal support. We have endeavored to give the Membership a constructive and business administration of the affairs of the Association. Today its executive officers render an accounting of their stewardship.



President George S. Forderer

During the coming year it will be the aim of the Association to perfect and expand further our present services and to add others.

One of the new departments planned for 1923 is a Safety-First Department which will devote its efforts to the elimination of carelessness, an enemy that destroyed over 12,500 persons in motor car accidents in 1921 and injured upwards of 350,000. This department will direct a continuous safety-first campaign having as its object the education of motorists to

observe the laws. It will see to it that the motorist is given a square deal, that traffic conditions are improved and that the reckless driver and speeder, whose activities are bringing about the adoption of drastic and harassing regulations, are checked and punished. This department will likewise concentrate its energies towards education of the pedestrian. Signs pointing out the number of persons injured or killed at crossings and urging careful driving will be erected. The necessity for care in crossing streets will be impressed upon school children.

Road-Signing Plans

As its contribution to the Greater Northern California Development movement the Association during the past year has completed signing the Victory Highway to Kansas City. It now plans to sign all other roads leading the tourist into Northern California and to care more adequately for his touring wants upon his arrival. Over 100,000 automobile tourists in their own cars annually visit California, not taking into account those who come by rail or buy or rent cars while here. These motoring tourists spend approximately \$6,200,000 per month, or a total of \$75,400,000 per year, in California. Many of them locate permanently and it is a fact that a very considerable portion of land sales made in this state every year are purchases made by people from other states attracted to California by its reputation as a playground and a wonderful place to live in. The good roads whose construction the Association has so constantly fostered have been instrumental in greatly increasing the values of land through the state. All of the people in the state benefit by these vast expenditures and enhancement of values. The Association will erect signs at the state line welcoming the tourist to California and offering to supply him with data as to state laws and traffic information. In

DIRECTORS ELECTED AT ANNUAL MEETING OF C. S. A. A.

Percy E. Towne, San Francisco
D. H. Lafferty, Santa Rosa
H. R. Basford, San Francisco
Arthur H. Breed, Oakland
Irving H. Kahn, Oakland
John R. Graham, Merced
Arthur Hebborn, Salinas

Edwin F. Merry, San Francisco
Truman G. Hart, Fresno
W. T. Sesnon, San Francisco
Francis Carr, Redding
Frank A. Cressey, Jr., Modesto
Frank B. McKeivitt, Sacramento
H. J. Brunnier, San Francisco

George S. Forderer, San Francisco
Thomas W. Hine, Eureka
Milton H. Esberg, San Francisco
P. J. Walker, Oakland
W. S. Clayton, San Jose
Burton A. Towne, Lodi
William T. Jeter, Santa Cruz

Reviewing The Year

the summer months, alone cared for the touring wants of 6,421 motorists.

Approximately 75,000 incoming telephone calls were recorded during the past year and no less than 3,100 trans-continental touring parties were supplied with maps and road information describing their tours.

It may interest the members to know that the Association has sixty-four reliable representatives in addition to its own paid employees who report on road conditions for all sections of the Coast states. These representatives have been selected with great care and in every instance their judgment on road conditions has been found to be accurate.

When I tell you that our telephone and telegraph bills will average almost \$1,000 a month you may visualize the effort we are putting forth to keep up to the minute on road conditions, and when you realize we are serving almost 1,000 a day in this department, I am sure you will realize that this expenditure is justified.

The accomplishments of our Engineering and Map Making Department include the erection of 6,024 road signs, 201 traffic buttons and many hundreds of parking signs in the various municipalities within our territory, making a grand total of 36,024 road signs erected to date.

Victory Highway Signed

In addition to the foregoing this department completed the marking of the Victory Highway as far east as Kansas City, Missouri, nearly 4,000 signs being erected thereon, which entailed a cost of approximately \$20,000. Through coöperation with the San Francisco Chamber of Commerce, Real Estate Board, Motor Car Dealers' Association, Utah States Automobile Association, and certain individuals in Nevada and Kansas, approximately \$13,000 of this amount was underwritten, thereby leaving the Association's contribution to this great cause \$7,000.

San Francisco, the western terminus of this road, is conspicuously displayed at the top of each of these signs and the mileage thereto given. These signs stand upon this great highway 365 days out of the year and in addition to giving the direction needs of the motoring fraternity they constantly call to their attention the pathway to Northern California.

We have been keeping three trucks, two roadsters and the men operating them busily engaged in the work of this department, as well as five draftsmen and two engineers. The first of this month three Ford cars were purchased and equipped with specially built bodies and will be used in the maintenance of these signs and to mark detours properly. The operators of these cars will work out of the Fresno, Oakland and Sacramento offices.

At the beginning of the past touring season two large cars were purchased and fully equipped for mechanical first aid and towing service. Both of these cars were manned by

(Continued on page 30)

Looking Forward

addition our Engineering Department is now preparing a map of Northern California showing the points of interest and scenic attractions. While this map will not provide detailed road information, to which the supporting member is alone entitled, it will list and describe for the benefit of the visitor those scenic attractions awaiting his inspection in Northern California. This map will be given to him free of charge.

More Branch Offices

No other state in the Union can boast an Association of motor car owners giving a service so varied and so efficient, and it is difficult to estimate the monetary value to the State of the various promotional enterprises in which the organization participates. New branch offices providing additional points of contact for the touring member and bringing to all sections of the territory served by the Club the direct and complete services of the organization, are planned.

Before the next State Legislature the Association through its Legislative Committee will again see to it that the interests of the motor car owner are fully protected. It will continue to strive for completion of the original system of highways under specifications assuring dollar for dollar construction and adequate roads. During the past year when failure seemed imminent this Association through its Good Roads Bureau actively took charge of the campaign to bring about construction of a second highway down the San Francisco peninsula. Various organizations were called into conference and appropriations were obtained by a Committee headed by your President, from the Boards of Supervisors of San Francisco and San Mateo Counties, making possible the taking of the first step toward traffic relief in San Francisco and development of the peninsula counties. Rights of Ways will now be purchased and a complete survey for the highway and bridge is now under way. In attaining appropriations for this project, which the Association has advocated for over two years, it has rendered a signal service to all Northern California motorists. The traffic on the present peninsula road has increased six times since this twenty-four-foot road was constructed.

To Protect Motorists

The Association further plans to raise a permanent fund, portions of which will be offered, at the discretion of your Board of Directions, for information leading to the arrest and conviction of automobile bandits preying upon the motorist for gain. Through this fund we believe the Association can materially assist the State and County authorities in making the streets and highways of Northern California safe for the operation of motor vehicles.

During the past year through efficient management the Insurance Department of the Association has effected a saving of approximately a quarter of a million dollars for the

(Continued on page 34)



A placid stretch of the Klamath below Happy Camp

The Klamath River Road

Romantic Corner of California Is Now Accessible

By S. N. STONER

National Forest Examiner, Forest Service, San Francisco

AFTER a lapse of half a century the gold country of Siskiyou County is again to be familiar ground to the pioneer residents of the commercial and industrial centers of California and to the hardy settler of the Oregon country.

It will be possible for many of those sturdy spirits of the '50s who, having acquired their "pile" in the old placer days, have settled down to more prosaic pursuits in the Sacramento Valley and the bay counties, to witness again the mining of gold as it was done fifty years ago throughout all California.

The Klamath River with its tributaries is practically the only remaining gold stream in California where hydraulic mining may be carried on as in the days of Bret Harte. Along this great river and its smaller branches one can still see mighty streams of water directed and controlled by hydraulic giants with the weight of columns of water hundreds of feet high washing away mountains of earth and rock, transforming the face of nature, leaving nothing but the bare granite on which is deposited the precious gold.

Californians will again talk in familiar terms of the Big and Little Humbug, Scott's Bar, Hamburg, Oak Bar, Portuguese Creek, Siskiyou, Happy Camp, and Indian Creek, and the famous Classic Mine, Eyese Bar, the Salmon River and its Somes Bar, Forks of Salmon, Sawyer's Bar and hard-rock country around Black Bear, and on down to Orleans Bar and the

Trinity River country—all familiar names to the Californians of fifty years ago, but little known even to the children of these pioneers and totally unknown to that vast number of citizens coming into the state in more recent years.

This romantic corner of California is to be made accessible by the opening of the Forest Highway, just completed, connecting the Humboldt County road at Orleans with the Siskiyou County road at Happy Camp, thus making a continuous highway up the Sacramento and down the Shasta Valley to Hornbrook, thence down the Klamath River to Martin's Ferry and the highways of the great northwestern part of the state.

Throughout this fifty-mile intervening stretch of the Klamath, a wheeled vehicle has been unknown. The lowly mule was king of transportation and his only competitor in that line was the sturdy miner packing his supply of grub and tools along the rocky trails over the steep, rough slopes of its canyon walls. These modes of transportation will now give place to the swiftly moving auto speeding along this newly constructed highway of gentle gradient and wide curves.

Where only yesterday it required two long, hard days of travel for Uncle Sam to transport the mail from Orleans to Happy Camp, today the journey can be made in ease and comfort in as many hours.

In the old gold-digging days the nearest points of contact with the

great outer world were Yreka to the east, Crescent City on the shores of the Pacific and Grant's Pass in Oregon. It required weeks of dangerous, grilling toil crossing treacherous streams and flooded rivers, climbing narrow, slippery trails over steep mountains, packing on the backs of mules all the machinery and equipment for the mines as well as provisions and supplies for creature comforts.

All this is changed now. Powerful trucks loaded with tons of merchandise may now be loaded at Yreka or Eureka and in a short day discharge their loads at points to reach which only a short time ago would have required fifty mules weeks of time.

While hydraulic mining is still unrestricted along the Klamath and its tributaries, most of the rich diggings have been worked out and only the red scars on the slopes and great excavations, scores of feet in depth and acres in extent, remain. The bed of the river itself has long since given up its precious hoard; however, there still remain a few large operations with miles of flume and steel pipe lines and hydraulic giants. The descendants of the early miners have turned to more prosaic pursuits, and now the small flats and valleys left from the ravages of the giants are farmed to hay and orchards, which, under the influence of the rich soil and abundant water, flourish amazingly.

This section of California was beyond the sphere of early Spanish settlement and, while it was known at an

early period by Hudson Bay Company and American trappers, its real discovery came with the great gold rush of forty-nine and the early fifties.

In 1851 the rich diggings around Yreka were discovered, quickly followed by the Big and Little Humbug and continuing down the river to below Orleans Bar. Following the discovery of these rich diggings thousands of eager gold hunters came pouring into this section, creating an incredible demand for provisions and other supplies. Salt, for instance, was sold at the rate of an ounce of salt for an ounce of gold. This demand was supplied in part by stock raisers in the central part of the state who moved their flocks and herds to supply the miners with beef and mutton, but such things as machinery, clothing, shoes, flour, and other supplies were shipped by boat to Crescent City and transported overland by pack mules, until such time as wagon roads were constructed up from the Sacramento Valley.

At a later date stage lines were operated from Central California to Oregon and still later the Central Pacific built its railroad line, but these routes were far to the east and had but little influence upon the great stretch of river below Happy Camp.

The opening of this great highway, connecting Central California with the great northwestern part of the state, will mean that thousands of Californians, as well as others, will see for the first time the picturesque canyon of the Klamath, great virgin forests of pine and fir on the massive slopes of the Siskiyou Mountains, clear mountain streams abounding with trout and salmon, beautiful shaded groves of oak, ideal spots for summer camping and recreation.

While the highway will benefit thousands of tourists in an esthetic and hygienic way, its manifold benefits to the settlers along and adjacent to its route are incalculable, opening up as it will a path to market for the crops that may be grown in the rich soil of the valleys and gentle slopes along the river and its tributaries.

The opening of this great highway offers to the dwellers in the hot valleys

of the central part of the state and the cool region around the bay ideal sites for summer homes where forty-pound salmon and ten-pound steelheads may be caught in the main river or beautiful rainbow and Dolly Varden trout taken from the smaller streams; or by a trip back into the hills one may be assured of his annual allowance of



A curve on the new Klamath River road

bucks. The deer have greatly increased in late years, owing to the vigilance of forest officers in cooperating with the state in enforcing the game laws.

The highway, traversing as it does the center of the Klamath National Forest, opens up for commercial exploitation this vast area, containing twenty-eight billion feet of pine and fir timber, approximately one-half million horsepower of potential hydro-electric energy, rich deposits of gold-bearing quartz, copper, and other precious and semi-precious metals.

All of these great benefits, bestowed upon the people of California and the country at large, have been made possible by the continued and persistent efforts of the Forest Service to open the vast resources of this region to the public, to the end that its great forests may be intelligently managed and matured trees converted into lumber, the abundant pasturage fully utilized, the store of mineral wealth taken from its ledges, the tremendous hydro-electric energy now going to waste fully utilized, the ideal recreation conditions made available to the residents of crowded cities and torrid plains, and the rich soil of its small valleys and gentler slopes produce abundant crops of fruits, berries, vegetables and forage.

In 1917 the Forest Service worked out the preliminaries for a highway connecting the Humboldt County road at Orleans with the Siskiyou County road at Happy Camp, and since then the construction of the road has been diligently prosecuted under the direction of the engineers of the Bureau of Public Roads.

Construction work has been carried on from both Happy Camp and Orleans, the two ends meeting at the great steel bridge spanning the Klamath, midway between. Upon its completion a gold spike was driven, thus linking the great valley of California with the north-west corner of the state, and, incidentally, completing the largest project so far finished in the Government's program of providing an adequate transportation system in the national forests of the country.

From Happy Camp the highway follows down the west side of the Klamath River for a distance of twenty-four miles to the great steel bridge, 310 feet long, 60 feet above the water, where it crosses to the east side of the river, and continues down that side of the canyon, crossing the north mouth of Salmon River over a steel bridge 60 feet long and on to Orleans, where it crosses back to the west bank of the Klamath over a suspension bridge and connects with the Humboldt County road at that point. The total cost of this fifty miles of Forest

(Continued on page 36)

Driving in San Francisco

Wherein an Expert Discusses Traffic Problems

By CAPT. HENRY GLEESON
Commanding San Francisco Traffic Bureau

THE "A B C" of Traffic includes two admonitions: first, always be careful; second, obey the traffic laws. If the motorist will observe these two standard admonitions, a long step will be taken toward keeping the streets safe for motorist and pedestrian alike.

The most important laws governing the operation of an automobile are



Capt. Henry Gleeson

Sections 14 and 13G of the State Motor Vehicle Act. These deal with brakes and lights. Reliable brakes and lights are more important than an adequate supply of gasoline and oil. Your life and the lives of others may depend on the proper functioning of these two

important elements in the motor car.

It is necessary that every motorist be thoroughly familiar with the hand and arm signals used by the traffic officer and the position taken to indicate "Stop" or "Go." Remember that his uplifted hand means "stop." Both hands upraised means that traffic is to move. When the whistle is used for traffic signaling, one blast indicates a movement from east and west, two blasts means north and south, while three blasts means "Stop" or "Danger."

Action independent of traffic signals or failure to watch the signals given by traffic officers will always bring trouble. Traffic officers and traffic signals are the contribution of the city toward the protection of both motorists and pedestrians and the more rapid movement of traffic.

If You Are Tagged

If you are tagged, appear yourself at the time indicated. Failure to do this brings sure arrest and great inconvenience. Traffic laws and regulations to operate smoothly demand respect and this respect will be enforced, kindly if possible, firmly if necessary.

Speeding is especially dangerous in traffic. It is a violation of Section 22A of the State Motor Vehicle Act. Twenty miles an hour is the legal limit within the city limits; fifteen miles an hour is the legal limit in the more congested districts, while slower speeds are necessary at times when traffic is congested.

But there is something far worse than speeding. This is reckless driving. Most accidents are due to this type of law-breaking. Reckless driving violates

Section 20A of the State Motor Vehicle Act. It relates to right-of-way at crossings not regulated by traffic officers or signals; it concerns driving on the wrong side of the street; it deals with passing a standing street car; it explains lack of courtesy and caution in passing crossings. Reckless driving means ignoring safety zones and imperiling pedestrians. It means passing other vehicles at street intersections. It means changing the direction of your car without giving adequate warning of intention to change.

Every motorist should have his registration card in plain sight in a container fastened in the driver's compartment. It should not be kept in a pocket or under the seat. Operator's card should be carried on the driver's person at all times when he is operating a car. Neglect of these details, referred to in Section 11 of the State Motor Vehicle Act, brings inconvenience, embarrassing situations and possibly arrest.

Alcohol and Driving

The man who drives while he is intoxicated is classed under Section 17 of the State Motor Vehicle Act as a criminal. Alcohol and driving a car are incompatible. Clear vision is one of the things that a driver must possess, and alcohol impairs clear vision. It is better to sleep at home than in a hospital or jail. Don't ride in a car the driver of which you know to be intoxicated. It is like riding with a revolver pointed at your head, the slightest touch of which may snuff out your life. More accidents, fatal accidents, are caused by reckless driving by intoxicated drivers than by any other means.

INSPECT your brakes and know that they are ready for emergency. Have your headlights properly focused and adjusted at competent stations.

Carry your light-inspection certificate with you at all times.

Carry extra bulbs of proper candle power.

Be sure the test of lights provides for extra weight in the car—the more weight the higher go the lights.

Learn proper hand signals to show what you are going to do—not what you might do.

Make your hand signals in time and clearly and don't change.

Learn the places where STOP AND GO signals are used without a whistle signal by officers.

Watch for traffic officers at street crossings—they are not always in the middle of the street.

If you should have an accident, don't drive away until the results of the accident are definitely known. You must stop, render aid if necessary and establish your identity. This is required under Section 21 of the State Motor Vehicle Act. Failure to render aid renders you liable to imprisonment for from one to five years and a heavy fine.

There are many local traffic laws a motorist should be familiar with. You have often heard of Ordinance 1857 of the City and County of San Francisco. This refers to the length of time of parking in certain zones of the downtown streets. Cars must not be closer than fifteen feet to a fire hydrant, as the fire department requires this space for its fire-fighting apparatus. Cars must not be parked between blue and white police signs which indicate spaces reserved for hotels, theaters, business houses, banks or certain streets to prevent congestion in case of fire.

Diagonal parking narrows the roadway for moving travel. Wheels front and rear should be within a foot of the curb. Parking on crosswalks interferes with the rights of pedestrians. The motorist must always be considerate of the man who walks, for, after all, his rights are perhaps stronger than the motorist's. The safety zone is a sacred place for the protection of the pedestrian. It is for the use of passengers boarding or alighting from street cars. It is not hard for the motorist to avoid driving over the white lines indicating the safety zones. Every wheel that goes over this line causes a heavy expense of upkeep to the city.

Know the Law

To all these laws there hangs a penalty for violation. The great increase in motor traffic renders a thorough check on all offenders impossible. It takes money to buy stop and go signals and motorcycles, and pay salaries of additional traffic officers. Legislation that will do harm to the great automobile industry only will come if the motorist disregards the comparatively few rules of traffic.

Know the law. It is as essential as knowing how to drive. Know that your brakes are adequate and that your lights are not glaring. Be courteous to the pedestrian. The cautious motorist is prepared for all eventualities. He knows he can depend on his car and he obeys the law.

Highways and the Motor Car

Nine per Cent of California's Roads Bearing the Brunt of Tremendous Traffic

By C. C. COTTRELL

Manager Good Roads Bureau, California State Automobile Association

CALIFORNIA'S motor vehicle speedometer registered five and one-quarter billion miles last year.

It still is registering at the rate of over 14,000,000 miles a day.

Such figures sound like the fanciful flight of Jules Verne in his imaginative trip "From the Earth to the Moon."

Yet that mileage was made, and today is being repeated—exceeded on California's 70,000 miles of roads, good, bad and indifferent.

Which means that if every mile of road was traveled equally it would be traversed two hundred times each day.

But such equality of travel is but a dream of the "Good Roads" man.

Motor vehicle operators consider, among other things, the life of their cars, which obviously is prolonged by good roads.

By choice, they do not follow the bad road, or the indifferent road, but look for the good road.

They follow the line of least resistance.

California's paved roads, therefore, though constituting approximately only nine per cent of the total 70,000 miles, are bearing the brunt of this tremendous, ever-growing traffic.

This line of least resistance is being taxed to its utmost to accommodate California's three-quarter million motor vehicles.

Fourteen years ago California had 14,051 motor vehicles. Today it has 757,510 motor vehicles, an increase of 5,390 per cent.

This amount of traffic mostly confined to California's nine per cent of paved highways naturally means congestion; and congestion in motor vehicle operation means danger—danger to human life and to business life.

Monday morning's newspaper is a weekly chronicle of the danger to the operator of the pleasure car.

But the danger to the business life of the farmer, now vitally concerned

ESTIMATED CLASSIFICATION OF AUTOMOBILES FOR YEAR 1921

Class—	Number vehicles	Miles per year per vehicle	Total mileage per year of vehicles
1. Autos (other than below).....	486,922	6,200	3,018,916,400
2. Commercial autos.....	58,100	15,000	871,500,000
3. Busses and stages.....	2,000	13,725	27,450,000
4. Taxicabs.....	500	20,000	10,000,000
5. Autos in farm use.....	98,000	5,000	490,000,000
6. Auto dealers.....	10,445	7,000	73,115,000
7. Non-residents.....	22,925*	3,000	68,769,000
8. Public service.....	4,159†	10,000	41,590,000
9. State, Municipal and County.....	5,542†	10,000	55,420,000
10. Government—general.....	1,029†	10,000	10,290,000
11. Government—military.....	110	15,500	1,710,400
	689,730		4,663,760,800

*These figures for 3-month period only, duration of temporary license.

†These figures include both automobiles and trucks.

ESTIMATED CLASSIFICATION OF TRUCKS AND MOTORCYCLES FOR YEAR 1921

Class—	Number vehicles	Miles per year per vehicle	Total mileage per year of vehicles
Trucks:			
Drayage.....	500	4,600	2,300,000
Military.....	111	7,695	854,145
Light.....	22,139	11,000	243,529,000
Medium.....	7,610	11,000	83,710,000
Heavy.....	4,843	11,000	53,273,000
	35,203		383,666,145
Motorcycles.....	18,624	15,000	279,360,000

STATEMENT OF REGISTRATIONS BY YEARS OF MOTOR VEHICLES IN THE STATE OF CALIFORNIA

	Increase yearly	Total yearly
Up to April 8, 1907.....		10,020
During 1907.....	4,031	14,051
During 1908.....	5,510	19,561
During 1909.....	9,072	28,633
During 1910 and part of 1911.....	15,489	44,122
During 1911.....	16,657	60,779
During 1912.....	30,415	91,194
During 1913.....	28,522	119,716
During 1914.....	3,807	123,516
During 1915.....	40,274	163,795
During 1916.....	68,615	232,440
During 1917.....	74,476	306,916
During 1918.....	57,884	364,800
During 1919.....	141,981	506,781*
During 1920.....	97,406	604,187*
During 1921.....	139,106	743,293*
1922 to July 31, 1922.....	14,217	757,510†

*These figures are the total motor vehicle registration, i. e., automobiles, trucks, motorcycles, both fee paid and non-fee registration.

†These figures are the total motor vehicle registration of fee paid motor vehicles only.

in navigability of the arteries of motor transport, cannot be pictured in such vivid terms.

It exists, however. It is the old story of the sack of wheat sitting in the field. There the value of the grain is practically nil. It must be transported to market. The cost of that transportation represents one of the main factors in deciding whether the marketing of that sack of grain shall be a profit or a loss to the farmer.

Today over 25,500,000 tons of farm products annually are being hauled to market over California highways. Yet California agriculture, though one of the state's major industries, is still in its infancy.

If paved roads, or at least good improved roads, do not increase in more direct ratio with the increase in the use of motor vehicles for transporting farm products to cities and rail-heads,

strangulation of traffic to the farmer will be represented by many sacks of wheat left standing in the field.

Thousands of acres of uncultivated California land still remain waiting for transportation facilities that will make the exploitation of its fertility profitable.

Before these uncultivated acres are opened by the plow, radical steps must be taken to relieve the transportation difficulties that every year confront the California farmer.

That is why "good roads" means more than the answer to California's growing traffic problems, whether within the corporate limits of cities or trailing over the horizon to this state's fertile farm lands.

It is not just a matter of congestion, or of the respective merits of concrete, composition and other road materials.

It refers also to the problems of land colonization.

In this day and age the prospective farmer does not intend to be isolated in an agricultural district devoid of suitable exits to profitable markets.

He must have roads, good roads.

In looking for his acreage, therefore, he looks first for transportation facilities. If the roads are good, he will consider the benefits of the land.

The truth of this conclusion is proved from one angle by certain land districts of the state, where farm and orchard acreage has reached an exceptionally high market figure. Roads in these districts are among the best in the state.

California's position as the largest user of passenger cars, of course, is well known. In 1921 the state had one motor vehicle to every 4.6 persons. In other words, with the motor vehicles now in California, the state could be completely depopulated in twenty-four hours' time.

Automobiles in farm use in California in 1921 numbered ninety-eight thousand. This figure is exclusive of trucks, tractors and other motor vehicles of use only on farms.

Winter Touring

Some Suggestions for Short Trips During the Season of Changing Weather

By VONARD FRASER

WITH the advent of winter and its rain and its chill, the shorter trips are the more attractive for the motorist. One does not relish being caught on a narrow mountain road in a blinding rainstorm, nor enjoy driving every hour of the forty-eight of a week-end against a biting wind that takes the zest out of the tour.

True it is that every season is a touring season in California, but the spring and summer have attractions which the winter has not, and not the least of these is the general assumption that disagreeable weather will not be encountered tomorrow if the "fair and warmer" sign is put out today.

The winter days are the days to become thoroughly acquainted with the interesting relics of your own city and its environs. There is not a town in northern California that does not possess an attractive history if the various pages of record could be unearthed.

The ardent motorist will find a great deal of profit in perusing at his leisure such suggestive works as Bancroft's or Hittell's History of California. The latter is replete with interesting material, legendary and historical, and it has a very comprehensive account of the early days of California. It reads like a novel, and although the four volumes are rising in value from day to day so long has the work been out of print, almost any good-sized library possesses a set available for the use of the general public.

No one can read Hittell without a growing regard for things in California and without an increased interest in the possibilities of touring on the Pacific Coast. Two very good friends of mine, Professor Rockwell D. Hunt, formerly of the University of Southern California, and Professor Robert Cleveland of Occidental College, have published books dealing with the early records of the Californias, Hunt's "California the Golden" for a long time being the only available text for use in the schools. Besides these Professor Chapman of the University of California has written exhaustively on the Spanish régime on the Pacific Coast, an epoch of romance and color.

John Muir's Work

Then turning from the historical records, he who would have renewed interest in touring California will be interested in the works of John Muir.

A Few Winter Tours

HERE is a suggestive list of short trips for the winter months, the majority of them over the paved highways where weather conditions have little weight:

Big Trees—The redwoods of Santa Cruz can be reached by way of the new highway to Santa Cruz. Muir Woods also offers a short trip of scenic interest.

Coast scenery—California's old capital at Monterey with its quaint fishermen's harbor and its famous seventeen-mile drive offers an unequalled vista of the California coast line. This trip can be made easily by way of Santa Cruz. The Marin coast offers a different type of coast line, more rugged than that of Monterey. This may be reached through the government road at Fort Barry or by way of Stinson Beach.

Mission trips—No matter how often one visits the old missions there is something new to be seen, some angle more impressive than that encountered before. Sonoma, Santa Clara, Dolores, San Jose, San Juan—all are within easy reach of the bay district.

Bret Harte country—Placerville, the "Hangtown" of the early days, may be reached over the paved highway as well as Sonoma and "Jintown." The roads connecting these two points are negotiable with care at all seasons. This district is at its best in the late fall, the rich colors of the earth contrasting with the green of the shrubbery.

Muir was the minstrel in prose of the regions of the High Sierras, and every one of his contributions to California literature is beautiful in description and casts a glamour over the castellated peaks and gigantic gorges, reproduced before the imagination of the reader in all their vivid and inspiring grandeur.

Muir is both romanticist and realist. He feels the poetry of beauty while he writes with the care of the naturalist. He is thoroughly conversant with the wild life of the Sierras and can call every wildflower by name and declare the age of every jagged peak.

From the reality of Muir it is a short step in literature to the stories and poems of Bret Harte and the poetry of Joaquin Miller and Edward Rowland Sill and the rest of the band of Californians inspired by the diversified beauties of the California landscapes.

If the motorist enjoys the wonders of the flower-carpeted canyons he will be interested in acquiring a knowledge of the flora of the coast and mountain districts of the state. There are several volumes dealing with the wildflowers of California, some written for the

uninitiated and others for the advanced students of California flowers and trees.

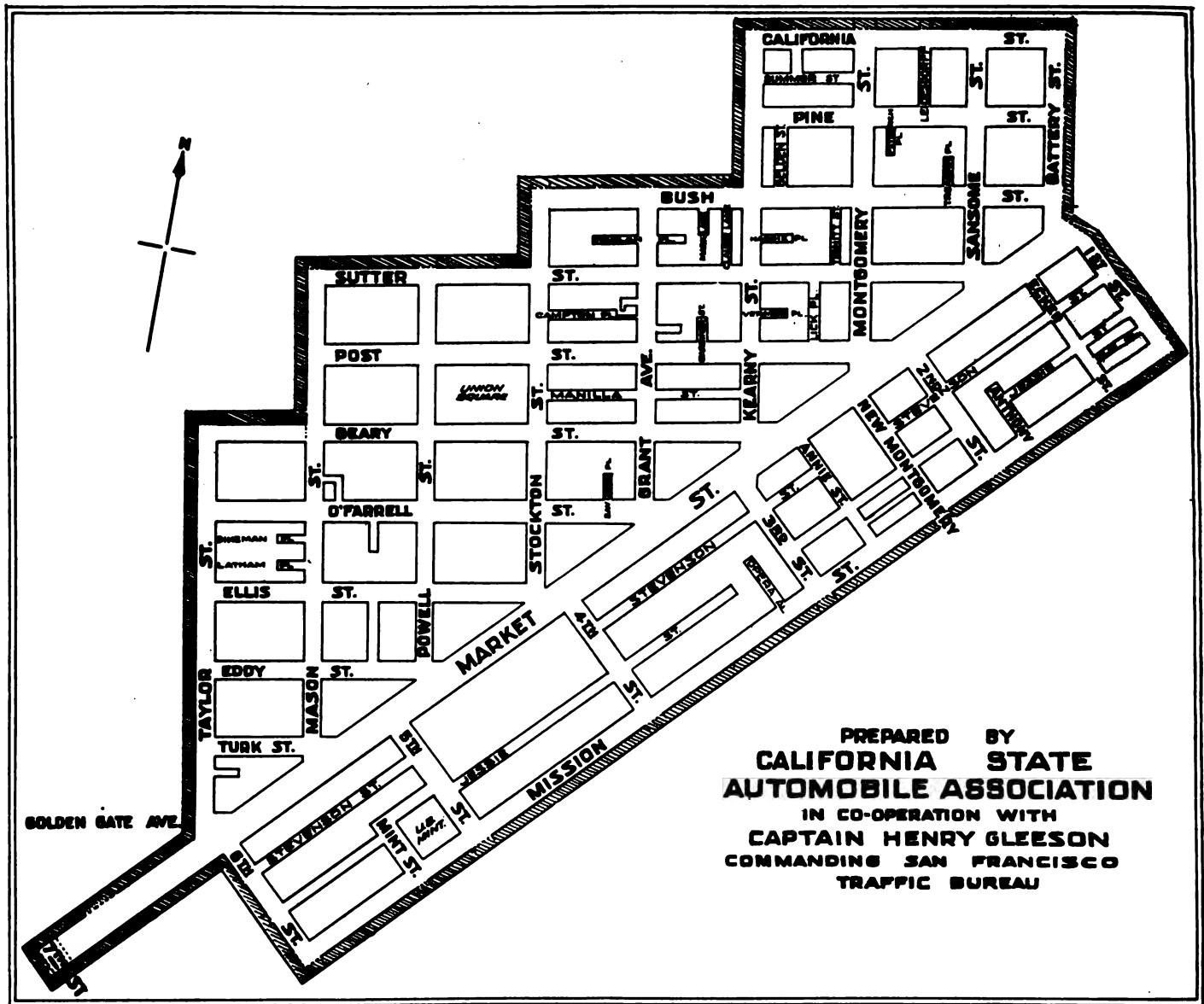
Romance in Places

One of the writers that few Californians are acquainted with whose accounts of the state in the days of the gold rush are well worth perusing is Bayard Taylor. Gertrude Atherton has woven one of the most fascinating of the love stories of the days of the dons into her novel, "Rezanov," while Frank Norris' "McTeague" has its setting in San Francisco and his "Octopus" was inspired by the country about Hanford. Robert Louis Stevenson's "Silverado" deals with the district about Mount St. Helena, where he spent the happiest days of his life, and there are frequent mentions in others of his works of his early experiences in California. It used to be told of a San Francisco newspaper man that he had turned down material offered by Mark Twain, Rudyard Kipling and Robert Louis Stevenson. Perhaps, a dubious achievement, but it is of interest as a reminder that all three of these worthies once attempted to make their way by newspaper work in the city of St. Francis.

The libraries of California are doing a great deal toward interesting the traveling public in the history and romance of California, and the field of California literature is so large that there is hardly a square mile in the state that does not possess its halo of literary inspiration. Now the motorist who prepares for his touring by steeping himself in California history and romance is insuring himself a new interest in traveling about the state and a greater pleasure in life. What better time to do this than when the nights are longer and the touring days are shorter? A winter of preparation means a spring harvest of pleasure.

But there are pleasures in wintertouring that the summer never knows. Have you ever made a trip in the dead of winter with the rain clouds distilling their heavy load on the circumambient atmosphere? The tires play a tuneful "slush, slush" as you splash through the water holes, and the gusts of wind bearing the rain threaten to blow your little ark into a thousand pieces. But on the motor chugs. Nature takes on a new aspect, now gloomy and forbidding, and now beneficent and cheerful. What more cheerful aspect has Nature

(Continued on page 36)



Map of the new parking zone established by the city of San Francisco

Parking Ordinances and "Sleepers"

New Legislation Favoring the Majority Against the Limited Few

NORTHERN CALIFORNIA municipalities are planning the elimination of the "sleeping automobile." No longer will the motorist be able to make the busy streets of trade play the part of a garage for his machine while he spends the busy hours of the day elsewhere. More stringent laws governing the parking of automobiles are being put into effect throughout the country and time limits are being reduced so that the majority will be favored rather than a limited few.

San Francisco recently put into operation a new ordinance limiting the parking of automobiles in the restricted territory to forty minutes from ten o'clock in the morning until six o'clock in the evening. This limit is to be en-

forced every day except Sundays and holidays.

In coöperation with the California State Automobile Association, Captain Henry Gleeson, commanding the Traffic Bureau, inaugurated a thirty-day campaign of education. During this period men and women motorists who park their cars longer than forty minutes in the restricted zone will be warned by the traffic officers to discontinue the practice in the interests of commercial firms and shoppers. No longer is it legal for the motorist to bring his car down town and park it alongside the curb in the commercial and financial sections of the city longer than forty minutes at a stretch. Curb lines are now cleared for the benefit of commercial cars engaged in the delivery

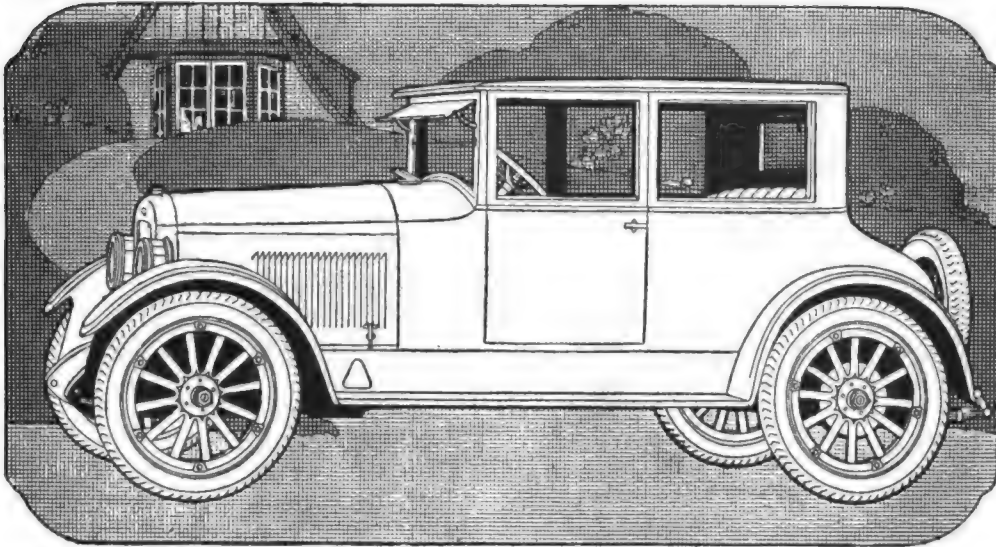
of freight and merchandise and also for the convenience of shoppers, salesmen and others who are compelled to make frequent calls in the restricted district.

The California State Automobile Association, for the benefit of its members and the motoring public in general, is erecting parking limit signs and will endeavor to coöperate with the police department in making known the streets included in the restricted area.

The new parking district includes the following:

Commencing with the intersection of Market and Battery streets, along the east line of Battery street to the north line of California street; thence along the north line of California street

A 50 Horsepower, Six Cylinder Coupe



All-Metal Body—Seats Four—\$1445

The more you know about motor cars, the more readily you will appreciate the tremendous achievement in real value embodied in this new Jewett Coupe.

Here is a closed car of smartness and distinction. Its harmonious lines are characteristic of Paige good taste; its completeness of details and appointments furnishes renewed evidence of Paige craftsmanship.

In this Jewett Coupe four passengers ride in roomy comfort—the driver in an easy individual seat, with two passengers in the broad 36-inch main seat, while a well padded arm chair unfolds to welcome the fourth.

The mighty rush of 50 H. P. is yours in this Jewett Coupe whenever your needs require it, yet that rush is modified to a whisper by the

perfect six cylinder balance of power impulses that overlap. And under you is always a chassis of coordinated units, scientifically designed to endure and to transmit indefinitely even the full power of which the great Jewett motor is capable.

You will search this Jewett Coupe in vain for any evidence of cheapness. Its body is of all-metal construction. Its substantial doors snap snugly into place. The whole finish is lustrous and lasting.

A year ago you could not have bought a car of similarly high quality for \$2500. Today the Jewett Coupe is yours for \$1445.

Set your expectations high. A call on the Paige dealer will justify every ideal you have conceived about this striking motor car value.

It is Sold and Serviced by Paige Dealers Everywhere

PAIGE COMPANY OF NORTHERN CALIFORNIA

Corner Van Ness Ave. and Sacramento St.

Telephone Prospect 605

VICTORY MOTOR SALES CO., 3000 Broadway, Oakland

JEWETT

A Thrifty Six Built by Paige

to the west line of Kearny street; thence along the west line of Kearny street to the north line of Bush street; thence along the north line of Bush street to the west line of Stockton street; thence along the west line of Stockton street to the north line of Sutter street; thence along the north line of Sutter street to the west line of Mason street; thence along the west line of Mason street to the north line of Geary street; thence along the north line of Geary street to the west line of Taylor street; thence along the west

line of Taylor street to the north line of Market street; thence along the north line of Market street to the west line of Seventh street; thence along the west line of Seventh street to the south line of Market street; thence along the south line of Market street to the west line of Sixth street; thence along the west line of Sixth street to the south line of Mission street; thence along the south line of Mission street to east line of First street, thence along the east line of First street to the south line of Market street and

thence to the point of beginning, the intersection of the northerly line of Market street with the east line of Battery street; provided, however, that stoppages caused by fires, blockades, breakdowns or other emergencies, or an ambulance, shall not be considered within the provisions of this ordinance; and provided further, that the provisions of this section shall not apply to the standing of any passenger vehicle upon any public or private stand created in said district under the provisions of Ordinance No. 1898 (N. S.).



Mr. Caesar on the job

That's What Old Caesar Did

*When Caesar took a westward ride
And grabbed the Gauls for Rome,
What was the first thing that he did
To make them feel at home?
Did he increase the people's loads,
And liberty forbid?
No; he dug in and built good roads—
That's what old Caesar did.*

*Did Caesar put the iron heel
Upon the foemen's breast,
Or did he try to make them feel
That Rome rule was the best?
What did he do to make them glad
As he came their lands amid?
He built good roads, in place of bad—
That's what old Caesar did.*

*He built good roads from hill to hill,
Good roads from vale to vale;
He ran a good roads movement
Till Rome got all the kale;
He told the folks to buy at home,
Built roads their ruts to rid,
Until all roads led up to Rome—
That's what old Caesar did.*

*If any town would make itself
The center of the map,
Where folks will come and settle down
And live in plenty's lap;
If any town its own abodes
Of poverty would rid,
Let it go out and build good roads—
Just like old Caesar did.*

—Author Unknown.



Its known value inspires confidence in Cadillac Owners

THE supreme confidence which Cadillac owners place in their cars is a logical outgrowth of a number of definite factors.

In the first place Cadillac dependability has been demonstrated for more than 20 years. This dependability embraces a degree of constant, unimpaired performance which has placed Cadillac in a distinct and separate class.

Secondly, Cadillac owners

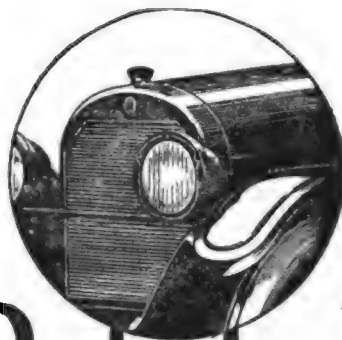
realize further that in every new model this Cadillac dependability finds an even fuller expression. Type 61 represents the highest attainment Cadillac has thus far achieved.

Lastly is the fact that the American public by an overwhelming majority has conceded leadership to Cadillac. More type 61 cars have been sold this year than all other cars combined selling at the Cadillac price or higher.

DON LEE

California Distributor

VAN NESS AVENUE AT O'FARRELL STREET
SAN FRANCISCO



CADILLAC

Standard of the World

Reviewing The Year

(Continued from page 20)

experienced automobile mechanics. One of the cars was stationed on what is known as the Chowchilla Mountain Grade, and the other on the Big Oak Flat Grade, both being on roads leading into Yosemite Valley. The service of these cars and their operators was free to our members, and I believe it will be interesting for you to know that they served during the summer months 665 touring parties. In addition to these many hundred were supplied with information respecting their trips through the High Sierras by the operators of these cars.

New Detailed Maps

In our Drafting Department strip maps were made covering the Victory Highway between San Francisco and Kansas City, the Santa Fe Trail Route and many of the principal routes through the states adjoining us on the north. We are now so equipped with maps covering the principal routes out of California that we have little or no difficulty in taking care of every request of non-resident tourists.

In addition to the foregoing we have revised and brought up to date all maps covering the various roads of California and are now preparing accurate maps of all our cities showing their principal thoroughfares and points of interest with their history and a brief description of the various attractions well written up and printed on the back thereof. In fact it is our plan to carry this work still further in giving historical data, approximate land values, and products on the back of each of our maps of the various sections.

When you consider that during the past year we served 225,000 motorists, which, conservatively estimated, represents 600,000 people, you can appreciate what this direct personal contact means to Northern California in advertising our scenic attractions, resources and the wonderful opportunity that exists in the various sections for the investor.

The Good Roads Bureau has experienced one of its most active and successful years.

It is no exaggeration when I tell you there is not a week passes that this department is not called upon for counsel and assistance in solving the many road problems of the various sections of our territory. Engineer C. C. Cottrell, manager of this bureau, successfully managed the Highway Bond Campaign of Colusa County and has given much of his time to the end of having another highway built down the peninsula from San Francisco.

Possibly one of the greatest contributions to the Good Roads cause of the West was made by Engineer Cottrell when he went to Washington, D. C., and spent approximately three months' time there in behalf of the Phipps-Dowell Bill.

Western States Benefit

Before this bill became a law the State of Nevada was compelled to expend one dollar for every dollar received from the United States Government for road purposes. When you consider that ninety per cent of Nevada's land is still owned by the United States Government and that her total population does not exceed eighty thousand and that the distance across this state is nearly six hundred miles you can appreciate her inability not only to build her own roads but to match this money from the Government on this basis.

Since the Phipps-Dowell Bill became a law our western states receive a more equitable distribution of these Federal funds; Nevada receiving \$7.55 for every dollar expended by it for road purposes, Utah \$3.00 and California \$1.50.

In no endeavor to detract from the credit that is justly due others for their coöperation in this great work in the West who gave so much of their time to this cause, I do

believe, however, it is appropriate for me to avail myself of this opportunity of telling you just what Engineer Cottrell contributed to this work. During the three months' time he spent in Washington he was constantly before the Road and Highway Committees of both the United States Senate and the House of Representatives, giving them, in person, the real, concrete facts confronting our western states respecting their highway construction problems and particularly the inequitable method of distributing Federal funds for this purpose.

Senator Townsend, chairman of the Road and Highway Committee of the Senate, told your secretary, personally, that Cottrell contributed as much or more to the success of this bill than any other outside agency. He particularly commended our Association for its deep interest and activity and Cottrell for his knowledge of highway matters in the West.

The Legal Department has made remarkable progress during the past twelve months. One year ago this Department was operated with one attorney, but today we find the demand for our legal service to have grown to such an extent that we have three attorneys and a like number of stenographers in the home office and six associate attorneys connected with the various branch offices looking after the work of this department.

The home office alone recorded 584 new cases during the past twelve months and collected for our members \$12,106.47. Other members receiving service from this department in the home office alone totaled 2,174. Needless to say this service is all free to our members.

Insurance Department Progress

During the year just passed the Insurance Department of the Association, which is operated without profit for the benefit of the members, has made most gratifying progress. This department is, of course, operated in accordance with the insurance laws of the state and under the supervision of the Insurance Commissioner, who makes periodical examinations of the Inter-Insurance Bureau's affairs. A detailed statement covering all of the Bureau's operations for the preceding twelve months, its financial condition, etc., is rendered to the Insurance Commissioner on December 31 each year. In the October number of MOTOR LAND appears the Bureau's last semi-annual financial statement, and the annual statement together with a summing up of the year's results will appear in either the January or February number.

This Department, during the first nine months of this year, collected in premiums from members a total of \$627,911.40, which is an increase of 48 per cent over the amount of business of the corresponding period last year. The total net business for the year 1922 will approximate \$900,000, and the savings in automobile insurance cost effected for the members will be close to a quarter million dollars.

During the year the Bureau's working force has been greatly increased and its Claim Department especially augmented so that the same high standard of adjusting service which has characterized the Bureau in previous years is being maintained, with the result that the members are receiving a character of service in time of loss which is, we believe, unequalled.

MOTOR LAND, the Association's official magazine, shows a substantial profit for the fiscal year ending September 30, 1922. This profit is based on fifty per cent of the regular subscription price of the magazine to the membership of the Club.

The popularity of the magazine with the membership is

(Continued on page 34)

End the Shocks that bring motoring fatigue!



Create your own good roads!

USE

HOO DYE

(HOUDAILLE)

HYDRAULIC SHOCK ABSORBERS

BAD roads seem like good roads to a motorist driving a car equipped with HOUDAILLE HYDRAULIC Shock Absorbers. The "short cut," which many would avoid, can be traversed with the same ease and security as riding over a smooth macadam drive. You need never worry about the unexpected bump. Houdailles gently cushion the compression of the springs and check the rebound. The effect is unsurpassed roadability. Houdailles are used as factory equipment on many of the world's best cars. Let us give you a demonstration.

Ask your dealer to show them to you and tell you more about them. If he can't do it, write us for the information

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WIRE WHEELS

—and why they are a good investment

The foremost builders of high-grade cars, such as Rolls-Royce, Packard, Marmon, Cadillac, etc., know that Wire Wheels are a good investment. They **KNOW** that Wire Wheels not only add smartness and distinction to the appearance of a car but they also are a good investment because:

—they improve the easy-riding qualities of the car;

—they rob tire-trouble of its terrors and, therefore, increase the pleasures of motoring;

—they increase tire mileage and, as a result, save money for the owner;

—they provide additional safety for the passengers, due to the strength of the triple rows of spokes.

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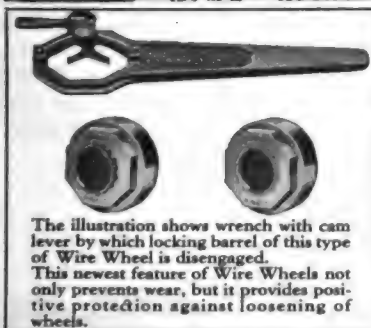
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Wire Wheel Sales & Service Co.,
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The illustration shows wrench with cam lever by which locking barrel of this type of Wire Wheel is disengaged. This newest feature of Wire Wheels not only prevents wear, but it provides positive protection against loosening of wheels.

five wheels, triple spoke, detachable at hub

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Where They're Flying

Open Territory Where Hunters May Pursue the Elusive Duck

THE scatter-gun artists are now collecting the annual income tax from Mr. and Mrs. Mallard, Mr. and Mrs. Sprig and Mr. and Mrs. Teal, and their respective families. The duck season formally opened October 1st and thousands of automobiles are daily visiting the territories where birds may be found.

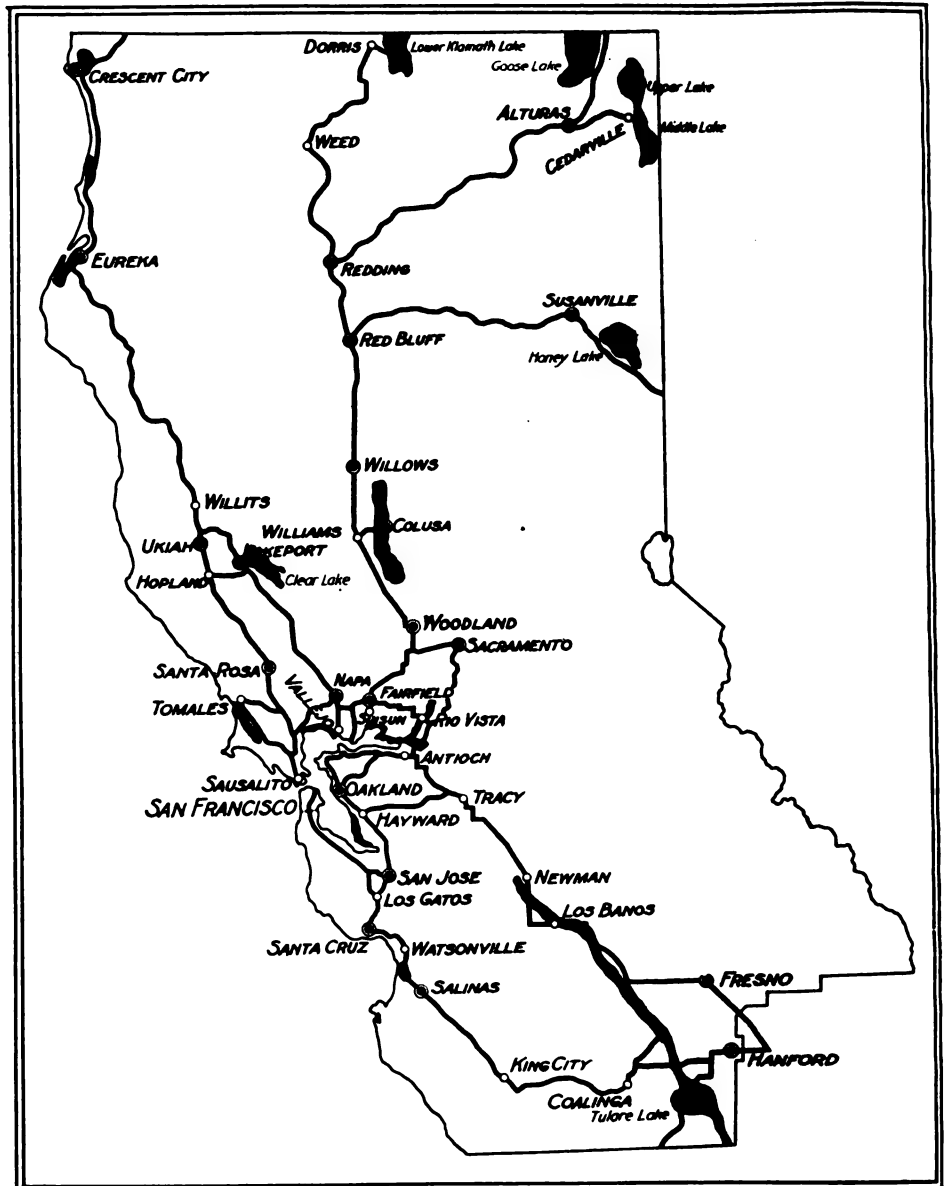
With the coöperation of J. S. Hunter, assistant executive officer of the Fish and Game Commission, the Touring Bureau of the California State Automobile Association has prepared the accompanying map showing the sections where non-members of gun clubs may try for the limit. For the convenience of members the Association is also in a position to issue hunting licenses at either the main office or the district branches. The roads leading to the sections where ducks may be obtained are thoroughly signed by the Association and strip maps and up-to-the-minute road information are available to members.

This season the ducks are coming in in even greater numbers than in the past few years. This is probably due to the wise laws adopted by both the state and Federal governments. In almost every part of the state where there is duck country there are reported to be thousands of birds.

Duck Grounds Crowded

The Sacramento Valley duck grounds are crowded, also the Suisun Marsh and the open water in the San Joaquin Valley—thanks to the heavy snows and rains of last winter, which were much more than they have been for several seasons. On the coast in the Tomales Bay section and in the Elkhorn country fat sprig are also reported abundant. Canvasback ducks are also coming in and one flock of over a thousand has been reported in San Pablo Bay. Everything considered, conditions are more favorable than they have been for years, and the 1922 season should be one of the best that we have ever had.

San Francisco and Oakland hunters can arrange to make the trip by automobile to the duck country in the vicinity of Los Banos or Colusa. It is only 140 miles to Colusa and 120 miles



The "Duck Country" open to the public is shown in the shaded areas.

to Los Banos. At the opening of the season it will probably be necessary for hunters to make reservations, but after the excitement which always prevails at the beginning of the season, there will be an abundance of ground where arrangements can be made to shoot.

Duck hunters should remember that in order to keep out of trouble it is

necessary to comply with both the state and Federal laws. Keep within the limit and above all do not kill shore birds, more commonly known as sandpipers, curlew stilts, etc. The only shore bird that can be killed is the jacksnipe. All others are protected by both state and Federal laws at all times of the year.





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Dates Set for Pacific Automobile Show

Seventh Annual Exhibition to be Held in San Francisco, February 17-24

THE Seventh Annual Pacific Automobile Show is to be held in San Francisco the week of February 17-24, according to an announcement by George Wahlgren, manager of the exhibit. The show will be held as usual under the auspices of the Motor Car Dealers Association, and it officially marks the inauguration of the spring touring season.

The automobile show has become the main stimulus to motor car buying of the early spring. But it is more than that. It has a wider scope. Somehow an exhibition of this kind, representing as

it does the finest of things mechanical, assembled in a gorgeously decorated exhibit, has a definite reflection on the increase of trade throughout the business world. The man who looks over such an array of transportation units feels a rising pride in the civilization in which he lives. The sight of prosperity makes for prosperity. Nothing can be more representative of prosperity than the sight of a spanking new motor car in a pretty setting.

A motor car show attracts not only the man who owns an automobile, but the potential buyer as well. The very

air reeks of barter and sale, and when you find an atmosphere such as this you must find prosperity. Business depression only comes when buying and selling comes to a standstill. Prosperity means a plentiful circulation of money. Through the medium of the automotive industry there is a tremendous distribution of the almighty dollar that affects directly or indirectly every one of us whether we are selling cabbages or shoes, magazines or chewing gum. To paraphrase the famous speech of the Melancholy Dane, "The show's the thing."

Reviewing The Year

(Continued from page 30)

constantly increasing as is shown by the fact that over fifty per cent of all changes of address are either forwarded direct to the magazine department or to the Association with the specific request that the address be changed on MOTOR LAND's subscription rolls. It being reasonable to assume that the member must know that to change his address with the Association proper would accomplish this result in all departments, his direct request and specific mention of the magazine would indicate this unwillingness to miss even a single copy.

Without spending five cents for advertising MOTOR LAND's news-stand sales have reached fifty per cent of the number of copies delivered by the news company. In a word, the magazine sells itself by comparison with similar publications.

Intimate knowledge and appreciation of the sacrifices of time, money and energy by an unselfish group of public-

spirited men who have subordinated their own interests time and time again during the past busy year to the end that the Association's great work might continue unhampered, inspires me to overstep the limitations of a report designed but to review the year's activities. I refer to the officers and directors of the California State Automobile Association, busy business men of large affairs who have responded to every draft upon their time, their purse and their wisdom. These men have attended during the year fourteen meetings of the Board of Directors, seven of the Executive Committee, four of the Finance Committee and two each of the Membership and Good Roads Committee. Their splendid coöperation at all times has made possible the accomplishments I have outlined and to fail to publicly express to them and to my assistants my sincere appreciation would be to leave incomplete the history of a year of achievement to which each and every one of us may point with pride.

Looking Forward

(Continued from page 20)

insured members. Its Claim Department is now giving in addition to a substantial saving a class of adjusting service which is unequalled.

Your approval of the detailed reports to follow is the sole reward of the Board of Directors for their sacrifice of time and energy in bringing nearer to realization the purposes for which we are banded together.

Initial Steps Taken for Golden Gate Highway

The initial step in bringing about the improvement of the proposed Golden Gate Highway following the shore line from the foot of Van Ness Avenue through the Golden Gate at Old Fort Point to a connection with existing roadways in Lincoln Park has been taken by the California State Automobile Association. The Association through its president, George S. Forderer, has brought the matter officially to the attention of the Street Committee of the Board of Supervisors in the following letter:

"This Association has become quite interested in a project of building and improving a highway following the shore line from the foot of Van Ness Avenue through

the Golden Gate at Old Fort Point to a connection with existing roadways in Lincoln Park. This we have called the Golden Gate Highway.

"The project particularly appeals to us because it would be a boulevard of exceptional scenic attraction and would make it possible to show what everyone visiting California wishes to see—the Golden Gate. We do not believe the cost would be as excessive as an offhand opinion would indicate, for it is possible even now to drive most of the distance in a machine.

"Practically all of the project is within the military reservation and no difficulties should be experienced in securing rights of way.

"We would very much appreciate your causing to be made a reconnaissance survey of this project, determining whether or not the military authorities will grant the necessary rights of way or otherwise coöperate, and if possible fitting it into your plans for the improvement of a boulevard along the Marina."

Chairman Joseph Mulvihill of the Street Committee has promised an early inspection of the project and authorization of a reconnaissance survey.

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The Chief Sentry assures you of full measure. The sight glass shows you the level of gasoline before pumping begins. A tally bell rings at the completion of gallons delivered.

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THE LOVEJOY PACIFIC COMPANY

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LOS ANGELES, CALIFORNIA

LOVEJOY

Hydraulic
SHOCK ABSORBERS

The Klamath River Road

(Continued from page 22)

Highway was \$1,200,000. Of this, \$40,000 was contributed by Humboldt County and \$40,000 by the State of California, the remaining \$1,120,000 being provided from the Federal appropriation for national forest road work. Siskiyou and Humboldt counties have pledged themselves to the Federal Government to maintain the highway in first-class condition.

It is for an engineer to tell of the hundreds of thousands of yards of earth and rock moved, the hundreds of tons of TNT used, the bridges built, of the great slides which occurred, obliterating the accomplishments of weeks of toil, the heat and sweat of strenuous effort in summer, of the cold rain and icy blasts of winter, of the cost per yard of excavating the rock and earth and surfacing this beautiful highway over which we overcome the far reaches of this beautiful region, exultant in the thought that Congress is, in these recent years, according increasing recognition of the urgency of better roads and



Bridge spanning the Salmon River, Klamath River Highway

trails serving the national forests and that last year it appropriated fifteen million dollars for continuing the construction program and that we can confidently look forward to the time

when even the most remote parts of the great national forests, the storehouses of our country's great natural resources, will be made accessible by roads such as this splendid highway.

Winter Touring

(Continued from page 25)

in store for the traveler than the sun that shines out from the cloudy sky?

I like to go out in my car when the rains are beating their tattoo on the window pane. If you have looked well to your curtains and every fastener is of the variety that fastens and stays fastened, you're as cozy as if you were beside the fireside at home. And the patter of the rain on the roof of the car reminds the tourist of the days when he lay in the old attic and harkened to the rain on the roof of the old homestead. The grass is already springing up in the path of the rain. The hills are already taking on themselves some of the hues of the springtime. The fall and winter make up one of the most beautiful of seasons in California.

The Warm Rains

When it rains it is rarely cold enough in California to be uncomfortable, and if you are a motorist who believes in having his car well tired, well equipped throughout for any kind of going, rough or easy, you do not have to worry about stopping on the way to mend a tire that has ended its usefulness, or to clean out a gas line that refuses to carry gas.

The motorist who has never been caught in the rain on a motor jaunt of

any considerable distance doesn't really know what pleasure he has missed. When next the rain clouds are busy and the highways are in the process of Nature's winter washing, take the good steed forth on the road and try it. If you are a real motor tourist, you'll enjoy it. You certainly will if you look for the beauties of Nature that the days of mist and twilight always bring.

Your fireside preparation for the tours into the midst of the districts of California most storied in legend and history need not prevent you from trying a few of your spring schedules out before the advent of spring. One of the pleasant trips of the wintertime is a visit to the state capital and the museum of Forty-nine relics established in the building that was once the objective of all immigrants who came into California—Sutter's Fort. The old fort, restored through the efforts of the Native Sons, is a public park now, and a visit to this offers you an opportunity to spend an entire day profitably.

The old Presidio at Sonoma can be reached over paved roads, and here you will find the very room in which the Bear Flag was made that was the symbol of the short-lived Bear Flag Revolution that helped to bring Cali-

fornia into the Union. Across the street from the old barracks is the Mission of Sonoma, now owned by the state. Directly across from the mission are the old gambling dens and the hostelry which was once the habitation of Joaquin Murietta and Three Fingered Jack, two of California's most famous bandits.

Old Vallejo Home

Near at hand is the old home of General Vallejo, and a few miles farther on is the largest adobe house ever built, which was used by Vallejo as his headquarters when he was commander-in-chief of the Spanish forces in California.

Drive over the Black Point cut-off into Marin County and you pass through one of the most popular of the Indian haunts in California. There have been scores of Indian mounds found here which have contributed a storehouse of information in regard to the aboriginal races of the Pacific Coast. Mount Tamalpais was as sacred an object in the eyes of those simple natives as the great white-mantled Shasta was to the Indians of the Klamath district.

You may follow "all-weather" highway down to the first capital of Cali-

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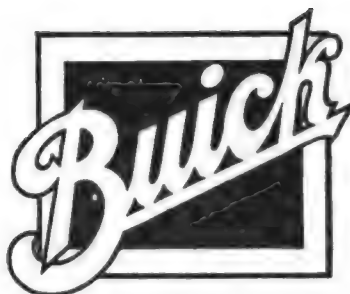
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fornia, at Monterey, and visit the very building in which the constitution of California was signed and where the first assembly was held that led to the admission of California into the Union. Here is the first theatre of California, where Jenny Lind is supposed to have sung to the miners. A score and more of old buildings that date back to the days of gold can be found here. One has been converted into a tea room. A tourist with a liking for history and romance can occupy his time to good advantage day after day in looking up the old landmarks of this quaint little town.

The Stevenson house is well preserved, and the first wooden structure in California—every timber of which was brought around the Horn—as well as the first brick dwelling in the state can be seen there. Monterey lies “in a mantle of old traditions,” and the story of its early days would supply material for many a novel.

Snow a Novelty

Snow is somewhat of a novelty to Californians, and a trip to the snow is

an interesting motor jaunt for the wintertime. Shasta can usually be reached during the dead of winter in two days' driving, while the road to Tahoe or to Yosemite may be attempted by those who like a more difficult drive. One of the most popular of the winter trips for northern Californians is the Yosemite trip after the first snows. Merced may be reached on the paved highways, and here the car may be shipped in over the railroad for driving around on the roads of the park which are kept open all year.

Yosemite in the wintertime is one of the grandest of all the wonders of the world. It is a sublime spectacle in midsummer, but with snow and ice adding their beauties to the landscape it is an awe-inspiring sight. Winter travel into Yosemite has increased by leaps and bounds, and the inauguration of winter sports in the valley as well as at Truckee on the Auburn route to Lake Tahoe has added a great deal of interest to the trip.

Of course the Mission trip from

Sonoma to San Diego may be made in any weather, as it is paved highway all the way, and this is one of the most delightful of the tours offered to the motorist. The Valley route over the famous Ridge Boulevard is also easily made in the days of storm, although last year there were some few days in which the travel was rather difficult on account of slides and falling rock. This has been remedied and the halting of traffic will probably not be repeated.

Don't give up your automobile in the wintertime just because it rains a wee bit. Winter touring in California is increasing even more rapidly in proportion to the number of machines involved than summer touring, and the day is coming when it will be difficult to decide whether the peak of traffic will be a day in December or in August. The closed car is one of the reasons. Another is the increased safety to the tourist through the improvement in machine design, the improvement in tires, and the more comfortable features which have now become accepted parts in the complement of the motor car.

The Winter Overhaul

Seasonable Suggestions for the Mechanically Inclined

MORE motor cars are given a thorough overhauling in the wintertime than at any other season of the year. Touring slacks up a little at this period and troubles develop coincident with colder weather conditions, more night driving and the like. To the average car owner overhauling is a mystery. He knows, perhaps, that his valves are to be ground, new piston rings installed, and possibly the names of one or two other operations that often are included in the overhaul, but the detail of the entire job is unknown and often unchecked by the owner after it is supposed to be done.

It is really pitiful the way a great many car owners will turn over a car to a mechanic to “find out what's wrong,” and have not the slightest idea of what should be done or what the approximate cost might be. Here is a brief outline of a typical overhaul which might come in handy for the car owner sometime, whether he essays the task of putting his car in order himself or calls on some outside aid:

First, the engine is to be thoroughly cleansed, the outside with gasoline, and the inside with coal oil. The drip pan must be cleaned, the car thoroughly greased and oiled, grease cups all checked up, etc. Fan, starter, generator, magneto, etc., must be oiled

and examined for wear. The gasoline line and tank should be cleaned; in fact, all surfaces of the car, outside and inside, should be given a thorough bath. This preliminary step saves much trouble and makes the location of necessary repairs the easier for the workman.

Put in New Grease

New grease should be put in all the grease cups, new oil in the engine, and the clutch shaft, universal joints, transmission, differential, steering gear, front wheels and springs should be suitably lubricated.

Next comes the task of checking up for loose pieces of the mechanism which, if allowed to rattle away, might cause trouble. All nuts and bolts should be taken up and bearings on front wheels should be carefully looked over. Some motor mechanics make it a practice of testing axles and spindles for possible crystallization, which may cause a serious accident without any warning.

The radiator should be tested for leaks, and all water connections tightened and repacked, if necessary, or new hose installed. Tires should be gone over carefully, bruises filled up with some tire compound and vulcanized and, if a thorough job is to be done, all tubes should be taken out

and replaced and casings given a thorough cleaning. There are many good tire cements on the market which prolong the life of casings, and inner tubes are often depended on past the limit of safety.

The steering gear should be given a thorough examination and be tightened, as it has a tendency to work loose. Lubrication of this most important member of the car is something that is often neglected with serious results. A noisy differential should be attended to and any sounds of wear should be noted in tests with the engine running at various speeds. Brakes should be adjusted for proper stopping of the car, and relining may be found necessary.

The Engine Overhaul

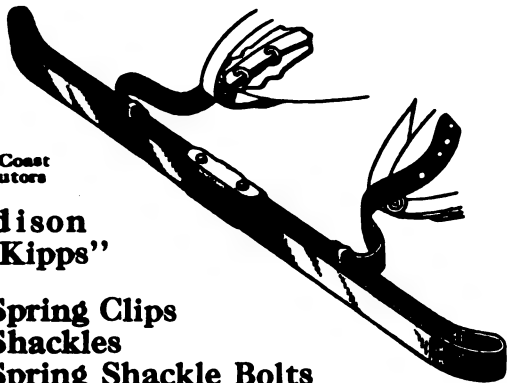
The most important part of the overhaul deals with the engine. Spark plugs must be cleaned and valve timing checked. Piston rings should be carefully examined, and if oil is found to be leaking past the rings, new rings should be installed. Loose bearings, weak exhaust springs, carbon in the cylinders, lack of compression in the cylinders, improper clearance of the valves—resulting in tapping—all these points must be looked into in the proper overhaul of the engine. Valves

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should be ground, and all gaskets and bolts checked up for wear.

Then turn to the ignition system. Test the battery with a hydrometer, and if the test shows weak cells, have the battery fully charged at a charging station. Trace every wire from the battery, and see that there are no loose or worn connections. Often trouble in starting may be traced to a loose battery connection, and inconvenience on the road may often be prevented by careful checking up in this manner. Horn, generator, lights, magneto, switch, starter, and coils must be gone over and examined carefully.

Too often the home-mechanic in an overhaul job will do a small portion of the whole task and abandon the rest. Trouble always comes from the parts which are not carefully watched, and the man who completes his overhaul

job and checks up each item on the list will seldom be troubled with halts on the road.

The Demonstrator

The dealer's demonstrator is a good example of the motor car at its best. This is the type of car upon which the dealer depends for sales. He cannot afford to have a demonstrator that may or may not perform when called upon. For this reason, extreme care is taken that every part of the mechanism is checked up at regular intervals. Heavy repair bills are due, outside of accidents, to carelessness or ignorance on the part of the owner. The man who wants to drive a motor car at the least possible expense must check up on the various elements that go to make up the power plant, at frequent intervals.

The manufacturers know what is good for their product. A new car is not to be used in speed tests until broken in. The car that is carefully handled, groomed as the horse was in the days before the motor car, will last ten times as long as the car which is neglected. The car that is allowed to run down through lack of lubrication and minor repairs may have a life of only a year or two, while a car which is "kept up" will be a good car for ten years. The modern motor car is built for service. But it is not able to take care of itself. Some drivers seem to think a motor car is wound up at the factory and all the owner should be compelled to do is shift gears and steer and pour in gas and oil at more or less frequent intervals.

Take care of your car. That is the last word in economy.

Yosemite Breaks Travel Records

More Than 100,000 Tourists Visit Park in 1922 Season

ALL records for tourist travel were broken by Yosemite National Park this season, the total number of visitors up to October 1 being 100,506. This shows a gain of 8,993 persons over last year.

Besides having broken all previous travel records for the year, new high records were also established in the number of people in the park at one time, and in the number of visitors for any one day. On July 3 there were 11,962 people in the park, as compared with the previous year's record of approximately 9,000 on June 20. In fact, the number of people in the park at any one time during the summer travel season was greater than at the corresponding time in any previous year. From early May to early September there were never fewer than 2,500; from early June to the middle of July, or even a little later, the number never fell below 9,500; and for a week in the latter part of June and the fore part of July the number was in excess of 11,000 at all times; the peak being reached on July 3, when, as before stated, it reached nearly 12,000.

The largest day's travel on record was recorded on July 2, when 2,263 people entered the park, of whom 1,943 came in 560 private automobiles. The best previous record was made on July 3, 1921, when 1,694 people registered, of whom 1,490 came in 401 private cars.

Of the total number of people entering the park during the year 36,004 registered for camp sites in the free camping grounds in Yosemite Valley. The number actually utilizing the public camp grounds was probably considerably in excess of this number, as, during the peak of the season, undoubtedly hundreds of campers failed to register. A complete record would undoubtedly have shown the number to have been in the neighborhood of 40,000 people. On July 3, 7,152 campers were occupying sites in the public camp grounds, approximately 2,500 more than recorded at one time in any previous year.

It is of interest to note that the average number of persons carried per automobile was more in 1921 than in 1922, the average being 3.408 for the

former whereas for the latter year it was 3.306. This is the lowest average per car since automobiles were admitted to the park in 1913.

More than ever does this year's travel indicate an increasing general appreciation of the National Parks, not only within the United States, but almost the world over. During the year residents of every state in the Union, the District of Columbia, the Hawaiian Islands, and the Philippine Islands visited the park. That the rest of the world was pretty well represented is proved by the fact that visitors from twenty-nine foreign countries, including eight of England's possessions, were registered, as follows:

Argentine Republic, Australia, Austria, Belgium, British Columbia, Brazil, Canada, China, Cuba, Denmark, Egypt, England, France, Germany, Holland, India, Japan, Java, Mexico, New Zealand, Norway, Palestine, Panama, Peru, Scotland, South Africa, Sweden, Switzerland and Uruguay.

One hundred forty-one makes of automobiles were represented, the Ford, as usual, leading with 2,871.

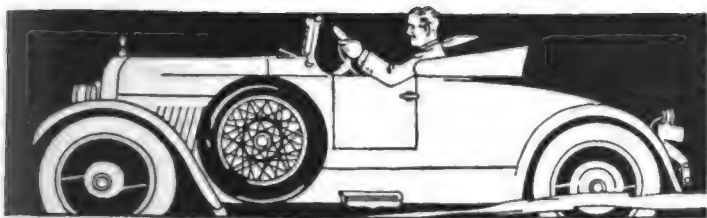
Sequoia National Park

(Continued from page 18)

Middle Fork Road from Three Rivers to Hospital Rock (14 miles) and thence by road and trail 8½ miles to Giant Forest. Prospective winter visitors should address the superintendent's

office at Three Rivers for full information. In addition to the Big Trees there are at Giant Forest from December to April opportunities for winter sports unexcelled in California. Just as a

reminder: Giant Forest, headquarters of the Sequoia National Park is 276 miles by road from San Francisco, and all of it but the last 29 miles is concrete highway.



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Motordom's Latest

The first reasonably priced automobile using seven-cent fuel, with steam as its driving power, has been successfully produced and demonstrated within the past few weeks in Chicago, after twenty years of intensive work in laboratory and shops of the American Steamer Truck Company.

In principle, the burner is much like those used in battleships. The heat is generated in a fire-pot, circular in shape, resembling a dome with a hole in the top, and seated in a square steel box 27 inches square, with a hole in the top, heavily insulated. The boiler is of the diagonal tubular type, of a size to fit down over the top of the steel fire-pot to which it is attached.

From a tank on the back of the chassis, the gas fuel flows to a pump which forces it out through an atomizer under pressure of 150 pounds. As this cloud of vapor passes an electric spark it is ignited. The vapor, in process of ignition, passes through a short tube and, striking and entering the fire-pot at a tangent, is thrown in a whirling motion around the walls of the dome.

The fire-control lever on this car has three positions. In first position the driver turns on the spark; as the lever advances, the fuel is allowed to spray across the spark; and lastly the spark is cut off and the fan set in motion. The oil once ignited needs no further spark and the fan is simply to supply sufficient air to the fire-pot for combustion purposes. When once a head of steam is procured, fuel is not constantly required and is often cut off entirely.

The American Steamer now in production makes about 10 miles per gallon of fuel, costing 7 to 8 cents per gallon, called gas oil by the trade. Using kerosene, a more expensive fuel, the machine shows about the same miles per gallon. Kerosene or distillate, however,

may be used successfully without any adjustment of the equipment. Steam can be raised in the boiler to a pressure of 600 pounds in two or three minutes, at which point the fire is automatically cut off.

The engine runs only about a third as fast as a gasoline engine to attain equal speeds. The car has not been tested on a speedway, but it has, on several trials, attained a speed of 65 miles an hour.

The present factory has a maximum capacity of 300 cars a month. The American Steamer will be placed on the market at the price of \$1,650.

New Type Wire Wheel

Considerable attention will be devoted by automotive interests to that part of the exhibit of the Wire Wheel Corporation of America at the Automotive Equipment Association Show in Chicago, displaying the new type House Wire Wheel.

The new American Steamer car and its power plant

The wheel, bearing the trade designation as No. 3 House Wheel, is conspicuous with its new and distinctive hexagon hub cap.

This new style hub cap is particularly advantageous in that it is considerably heavier and it provides greater bearing surface for the wrench and permits greater leverage on wrench when hub cap is to be removed or tightened.

Following the practice of the most expensive design, too, these small brothers of the Wire Wheel family have their new hub caps stamped "Right" and "Left," and they also have arrows which show the direction to turn for "On" and "Off." Every motorist cannot fail to appreciate the value of these two additional features in that they preclude the possibility of confusion whenever it is necessary for the owner to remove a wheel in changing tires.

It is to be noted that No. 3 House type wheel, triple spoke and detachable at hub with the new hexagon hub cap feature incorporated, is supplied in sets of five wheels, with carrier for extra wheel, four inner hubs, four hub caps, hub cap wrench and spoke nipple wrench.

Firm Name Changed

Pike and Smith, formerly of 865 Post Street, San Francisco, distributors for Distel Wheels and Everready Windshield Cleaners in the northern California territory, have disposed of their lease at the above address, and are now operating under the name of Dave A. Pike, at 955 Post Street.

Concentrating their entire efforts mainly on Distel Wheels they now feel that they will be in a position to give the quality of Distel Wheel service the public at large desires.

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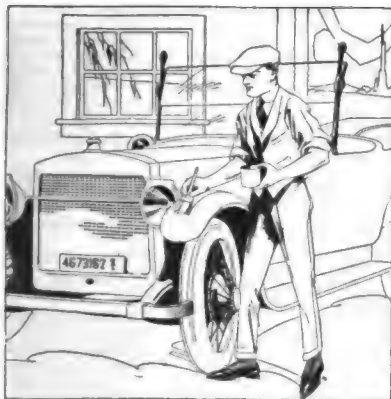


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TIME SCHEDULE

LEAVE SHORTWAY DAILY		LEAVE VALLEJO DAILY	
7:00 a. m.	3:30 p. m.	6:45 a. m.	2:45 p. m.
7:30 a. m.	3:45 p. m.	7:15 a. m.	3:00 p. m.
8:00 a. m.	4:00 p. m.	7:45 a. m.	3:15 p. m.
8:30 a. m.	4:15 p. m.	8:00 a. m.	3:30 p. m.
8:45 a. m.	4:30 p. m.	8:20 a. m.	3:45 p. m.
9:00 a. m.	4:45 p. m.	8:40 a. m.	4:00 p. m.
9:20 a. m.	5:00 p. m.	8:50 a. m.	4:15 p. m.
9:40 a. m.	5:15 p. m.	9:00 a. m.	4:30 p. m.
10:00 a. m.	5:30 p. m.	9:20 a. m.	4:45 p. m.
10:20 a. m.	5:45 p. m.	9:40 a. m.	5:00 p. m.
10:40 a. m.	6:00 p. m.	10:00 a. m.	5:15 p. m.
10:50 a. m.	6:15 p. m.	10:20 a. m.	5:30 p. m.
11:00 a. m.	6:30 p. m.	10:40 a. m.	5:45 p. m.
11:20 a. m.	6:45 p. m.	11:00 a. m.	6:00 p. m.
11:40 a. m.	7:00 p. m.	11:20 a. m.	6:15 p. m.
12:00 p. m.	7:15 p. m.	11:40 a. m.	6:30 p. m.
12:20 p. m.	7:30 p. m.	12:00 p. m.	6:45 p. m.
12:40 p. m.	7:45 p. m.	12:20 p. m.	7:00 p. m.
1:00 p. m.	8:00 p. m.	12:40 p. m.	7:15 p. m.
1:20 p. m.	8:15 p. m.	1:00 p. m.	7:30 p. m.
1:40 p. m.	8:30 p. m.	1:20 p. m.	7:45 p. m.
2:00 p. m.	8:45 p. m.	1:40 p. m.	8:00 p. m.
2:20 p. m.	9:00 p. m.	2:00 p. m.	8:15 p. m.
2:40 p. m.	9:15 p. m.	2:20 p. m.	8:30 p. m.
3:00 p. m.	9:30 p. m.	2:40 p. m.	8:45 p. m.

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P. J. Kelly's Garage 735 Van Ness Ave.
Mission Garage 1507 Valencia St.
Monarch Garage 1361 Bush St.
Monticello S. S. Co.
Pacific Heights Garage

Bush and Divisadero Sts.
Park Garage 636 Shrader St.
(North End of Ferry Building)
Pearson Garage 345 Bush St.
Post Office Garage 620 Jessie St.
Post-Taylor Garage 530 Taylor St.
St. Francis Garage 1240 Post St.
St. George Garage 410 Bush St.
U. S. Garage 750 Bush St.
Temple Garage 644 Geary St.
Union Garage 1550 Union St.
Willson's Garage 3708 Geary
S. & M. Garage 1220 Golden Gate Ave.

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Earl P. Cooper 1336 Post St.
Guarantee Battery Co., 955 Post St.
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San Bruno Cabin Garage
San Jose Hotel Montgomery
San Jose Hotel Vendome
San Jose Benson & Weaver Garage
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San Jose Mollitor & Ross Garage
San Jose Home Service Garage
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San Juan Hotel Mission
San Juan Service Garage
San Leandro Service Garage
San Martin Hall Bros. Garage
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San Ramon San Ramon Garage
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Ukiah Ukiah Garage & Vulcanizing Co.
Upper Lake Upper Lake Garage

Vacaville Hotel Vacaville
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To bring you a delightful tea flavor that is the purpose of the round vacuum tin which holds Folger's Golden Gate.

for tempting beverages and dainty desserts

Throughout the long period in which we have been in the chocolate business we have found that most housewives order chocolates through habit. Some tell the grocer to send them a can of "Ground Chocolate"—while others call for "Cocoa."

To meet this divided demand the House of Boldemann placed on the market two products of unsurpassed quality. Boldemann's Improved Ground Chocolate and Malt-Cocoa. Yet our contemporaries have proved that very few housewives really understand the difference between Ground Chocolate and Cocoa.

Ground Chocolate—no euphemism a combination of powdered chocolate, sugar and sugar. The addition of the sugar makes it practically ready to serve. Boldemann's Improved Ground Chocolate is made from superior quality cocoa beans blended and prepared to give highest nutritive value. By comparing Boldemann's with other ground chocolates you will appreciate its richer flavor.

Cocoa is Unsurpassed

Cocoa is always sold in unsweetened form—rich, at times, makes its initial cost to you somewhat higher than ground chocolate which is partly sugar. But in the long run, Cocoa is really more economical to use when Ground Chocolate, because a pound of Cocoa contains twice as many eggs as a pound of Ground Chocolate.

Malt-Cocoa—A Superior Cocoa

Malt-Cocoa is not a superior Cocoa. Cocoa but is a superior Cocoa.

The Malt Aids Digestion

We discovered years ago when Malt added in small quantity to pure Cocoa added in small quantity to pure Cocoa makes the Cocoa digestible for people who rarely before were able to drink it. That's why we blend 25% per cent Malt with pure Cocoa—and call it Malt-Cocoa.

BOLDEMANNS CHOCOLATE COMPANY
SAN FRANCISCO

BOLDEMANN
BETTER COCOA BEAN PRODUCTS FOR EVERY

RED CROWN GASOLINE

Every drop the same

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Here are handy novelties for cleaning, or polishing, or repairing, just the things you've always wanted. There are brand-new contrivances you'd never even heard of, but so useful—why hadn't you known of this place before? Why, it's just like tumbling downstairs on Christmas morning!

And the best part of it all is that *everything in the store* bears our guarantee to be just as represented. It must make good with you. Our prices are also part of the surprise—lower than you expect.

Won't you come in?

Western Auto Supply Co.

**40 Stores
in California**

**60 Stores
in all the West**

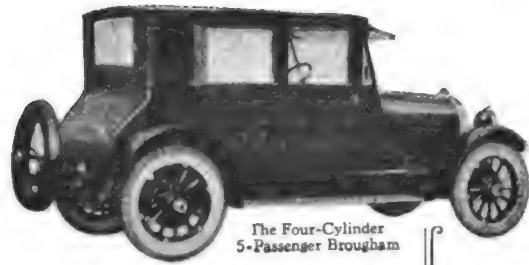


A powerful growing institution with 60 stores serving many thousands of motor car owners.

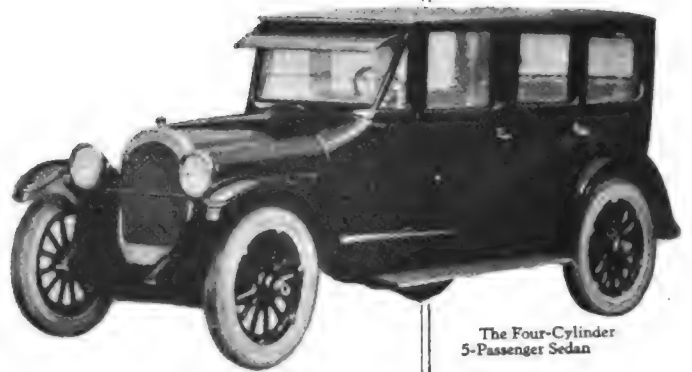
Oldsmobile
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The Eight-Cylinder
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MANY WHO, IN THE YEAR
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TO RENDER OUR SERVICE AND THERE-
BY RECEIVED THE FULL MEASURE OF
BOUNTEOUS PLEASURE AND A NEW
JOY IN MOTORING.

THE GRATIFYING RESPONSE TO OUR
EFFORTS HAS JUSTIFIED OUR FAITH
IN THE BELIEF THAT HE WHO STRIVES
TOWARD PERFECTION ULTIMATELY
REAPS THE REWARD OF APPRECIATION.

WE LOOK FORWARD TO THE NEW
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WORKMANSHIP.

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MASTER SPECIALISTS IN THE
REGRINDING of CYLINDERS
and CRANK SHAFTS

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Stephens Touring Car, six passengers, \$1625

Thrifty to own—generous in all that makes riding and driving ease

Power and endurance to meet any hazard of town or trail are coupled in the Stephens Six with ease of control and cushioned comfort that bring you to the end of the longest road without fatigue.

Stephens-built throughout, its flexible, valve-in-head motor develops 59 horse power. With superb performance you get low upkeep cost and 20 thrifty miles per gallon. *Come in and try the Stephens Six.*

The intake manifold—entirely inside the cylinder head and heated by all cylinder exhausts—"cracks" every heavy particle of gasoline and turns it into dry hot gas, radiant with explosive force.

This swift, responsive power gives Stephens acceleration to 50 miles in 20 seconds—and still more speed when you need it. Valve and carbon troubles are minimized. *Come in and let us show you how and why.*

Motor and chassis are both Stephens-built to the same high standards. The Timken axles, Fedders radiator, and new type Gemmer steering gear are all oversize.

Quality and lasting beauty show in every line and detail of the Stephens body. It is hand-fashioned and hand-finished—27 painting operations alone. *Come in and test its quality for yourself.*

With a wheel base of 122 inches, there is room for luxurious comfort. Doors are 21 inches wide. Seats 18 and 20 inches deep, with Marshall springs under cushions of crisp, curled hair and hand-buffed leather.

Equipment is complete—even to motometer, tonneau lights and cowl ventilator. Stop in and size up Stephens dollar value today. Get behind the wheel and compare its performance. *Start at your own door if you wish—just telephone the hour.*

STEPHENS MOTOR CAR COMPANY, Inc., Moline and Freeport, Illinois

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MOTOR CARS

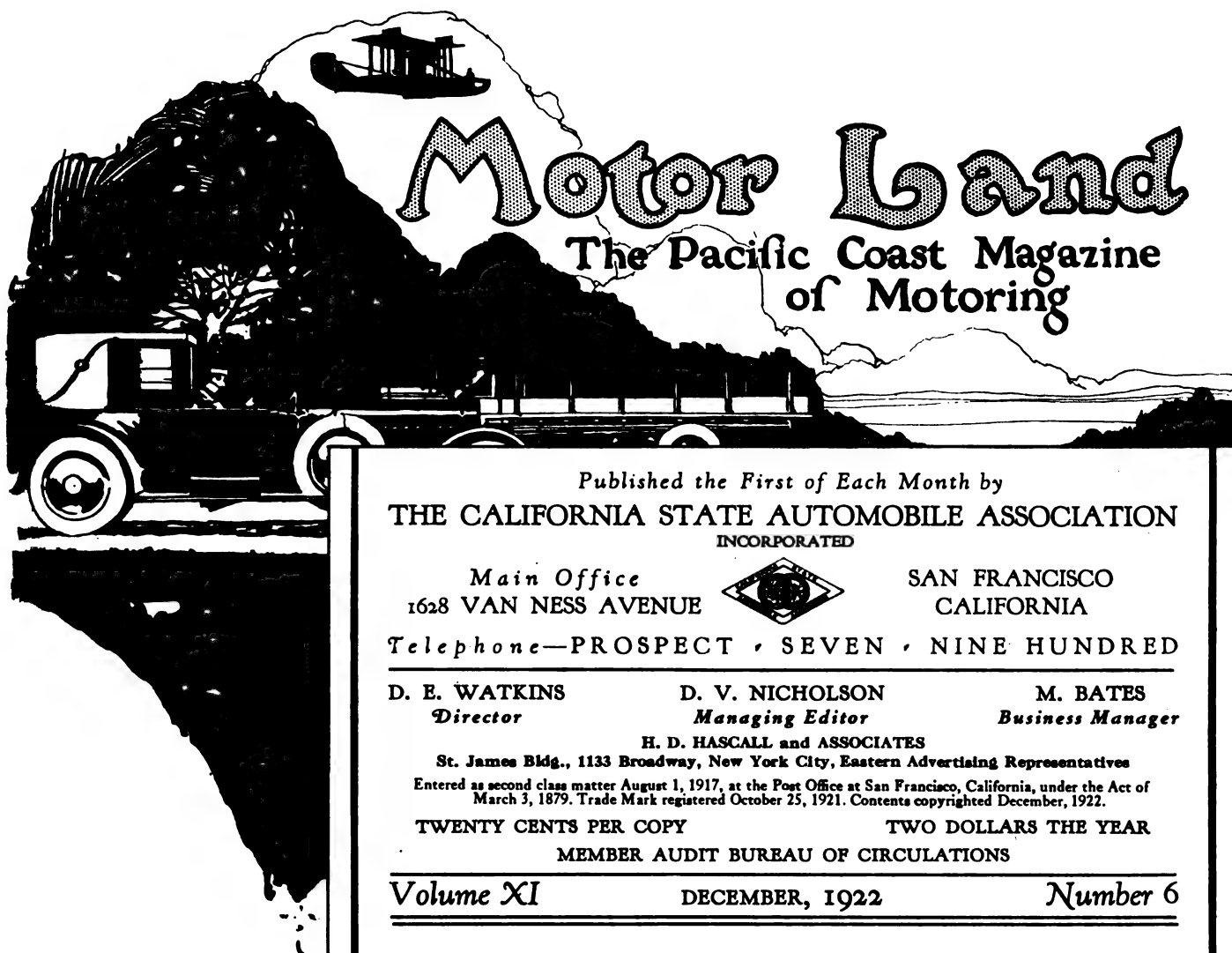
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 INCORPORATED

Main Office
 1628 VAN NESS AVENUE



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MEMBER AUDIT BUREAU OF CIRCULATIONS

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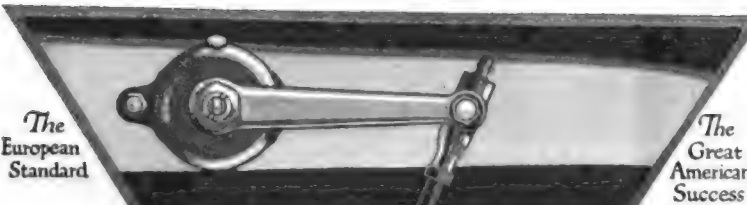
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The result of 15 years development. The "Hoo-Dye" principle applied to light cars. For Fords, Dodges and other makes.

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The illustration shows wrench with cam lever by which locking barrel of this type of Wire Wheel is disengaged. This newest feature of Wire Wheels not only prevents wear, but it provides positive protection against loosening of wheels.

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and what they will ADD to your car

The overwhelming percentage of high-grade cars now being sold with Wire Wheels as regular equipment indicates that buyers of the Nation's finest cars appreciate:

- that Wire Wheels add to the snap-piness and distinctiveness of a smart car;
- that Wire Wheels add to the easy-riding qualities of the car and to the comfort of the passengers;
- that, by reason of their quick change feature, Wire Wheels add to the pleasure of motoring;
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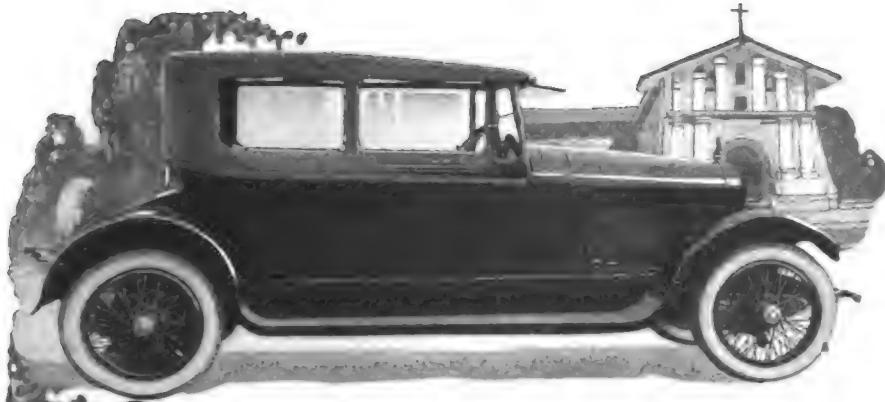
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This is a New Gillig Top, Model No. 3-A, designed for a four-passenger Marmon roadster. Has but one sliding plate glass panel.



A Gillig Top on your open car makes a rattleproof Sedan

Beauty and utility are remarkably combined in the NEW GILLIG TOP models. They are a delight to the eye and a distinct addition to the appearance of any car, no matter how beautiful its lines. And they are guaranteed rattleproof. The patented window-locking brake attends to that. That's an exclusive Gillig feature. The tops are designed to meet individual requirements.

Painting
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**Our catalog is ready
for you**

The 1922 Gillig Top catalog and supplement shows many beautiful models for any make of car. Prices are from \$195 up. Send for the catalog.

A Thoroughly Equipped Plant for Overhauling—

Our departments for painting, repairing and motor overhauling are splendidly equipped and manned only by expert craftsmen.

You are assured here of the very highest grade of work at the lowest consistent price.

You can effect a worth-while saving in time and money by having your repairing and painting done here at the same time, under one roof.

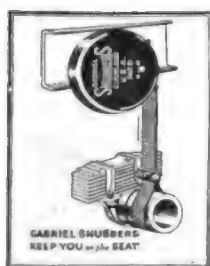
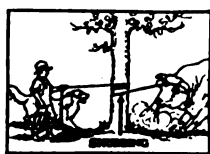
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Coach and Body Works
POST AND FRANKLIN STS.
SAN FRANCISCO



How Many Cars Can You Name?



Name all the makes of cars you can and you'll then realize the value of Gabriel Snubbers when we say that 65 well known makes are either standard equipped with Gabriel Snubbers or have their frames drilled for them at the factory.

Best for results, regardless of price.

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An Unqualified Success

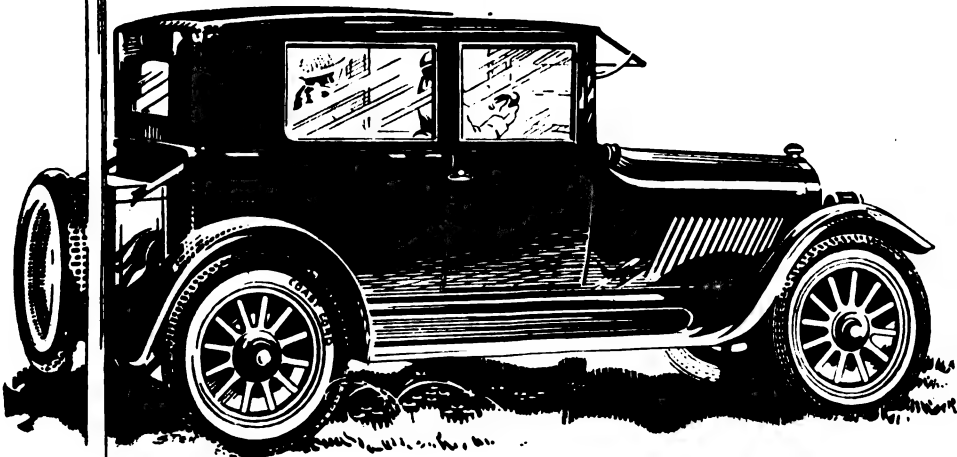
Eighteen months ago the purchaser of a set of *Coast Tires* might have felt that he was investing in an experiment—the name and the tire being comparatively new.

Not so today, however; for *Coast Tires* have proved themselves durable and reliable in all weathers and under all climates and conditions.

Their longer life, due to the high quality of materials and workmanship, makes them unusually economical.

COAST TIRE AND RUBBER COMPANY

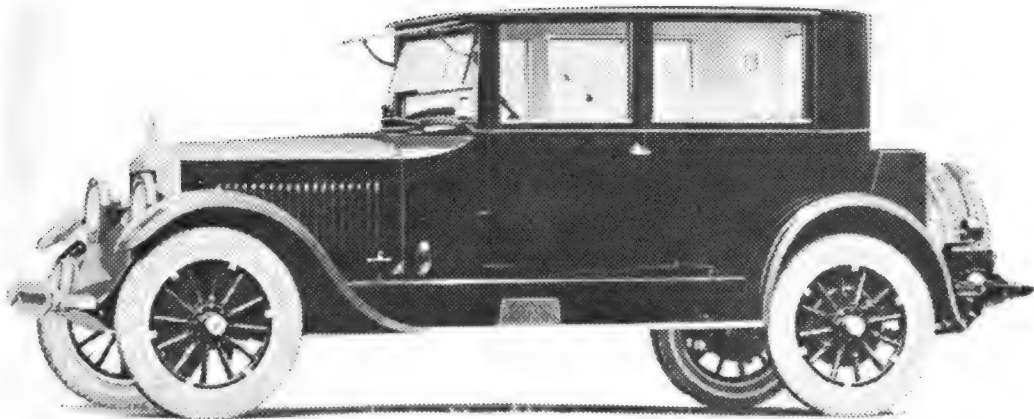
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Announcing *Studebaker's* LATEST CREATION

*A Five Passenger Coupe Built
On the Famous Big Six Chassis*



THIS new model must be seen and examined to be thoroughly appreciated. Words fail in adequately describing the beauty of its design and the richness of its finish.

Mounted on the Studebaker Big Six chassis, with its 60-horsepower motor and 126-inch wheelbase, the new five-passenger coupe has strength and power equal to its roominess and ultra modern appearance.

Unusual comfort is obtained in the seating arrangement. There is ample room for

three adults in the rear seat, which extends clear across the body. The driver occupies an individual seat. A folding seat is provided opposite the driver for the fifth occupant—in reality, a comfortable chair with padded back, arm and seat.

A trunk containing two suitcases and a hat box is mounted on an artistically designed trunk rack on the rear. Standard equipment includes numerous accessories that greatly add to the comfort, convenience and appearance of the car.

Five-Passenger Big Six Coupe **\$2935** Delivered Here—
Freight & Tax Paid

Chester N. Weaver Co.

1625
Van Ness Ave.
Phone Prospect 240



OAKLAND:
WEAVER-WELLS CO.
SAN JOSE:
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CURRENT COMMENT

"Now is the Winter of Our Discontent"

NOW is the winter of our discontent," said the Elizabethan dramatist. He probably didn't have any reference to motor cars and rain and tire chains, but the line fits very well with the disposition of the motorist when the skies are weeping and the going is skiddy.

The winter season is the time of year when the accident toll reaches its peak. Lack of chains combined with wet pavement, fogged windshields and murky atmosphere, more night driving, all these contribute to this increased accident list.

What are we going to do about it?

The only remedy is a resolve individually as motorists to "play safe." It means a consequent reduction in speed and

an added precaution at the wheel. The speed limit of safety on slippery pavement is the rate at which the car will not skid when the brakes are applied. Very often this rate is very low.

Lights should be regulated so that the maximum of illumination is secured with the minimum of glare, and the motorist should be confident that he may depend on the working of his entire ignition system at all times. Somehow the one-eyed cars and the cars without tail lights increase in number when the danger period rolls around. Be sure your car is physically "well" before you drive in the rainy season.

Remember that the greatest safety device in the world is the cautious man, and act accordingly. It is better to get there late than not get there at all!

"Beware the Ju-jub Bird, My Son!"

BEWARE the Ju-jub bird, my son!" wrote Lewis Carroll in his childhood classic of "Alice Through the Looking Glass." Now the Ju-jub bird resembles nothing so much as the pedestrian who aimlessly wanders about the street without a thought or a care of traffic laws or regulations.

The Ju-jub bird has no sense of direction; neither does his modern counterpart, the jay-walker. He flits here and there, hither and yon, to and fro, and forgets that the day of the slow-moving horse has passed and that we are now in the Age of Speed.

Curiously enough the frequent offender is the motorist himself, who has been driving about so long that he has forgotten how to unkink his heels from the tangles of gear levers and throttle. Perhaps some peculiar impetus stirs him when danger is nigh and his feet spasmodically bounce up and down on the pavement in the mad idea of putting on the brake or stepping on the gas, but the muscles respond not and it's up to the driver who bears down upon him.

Too much stress cannot be put on the fact that many a driver of a motor vehicle forgets he ever was a pedestrian, but in the same degree we must not forget the fact that we have driven motor cars when we step out of the driver's seat and thread our way through the maze of traffic.

The pedestrian should no more cut corners than the motorist.

"The public, as a whole, is too ready to place the blame for any accident in which an automobile figures on the driver of the automobile," declared M. O. Eldridge, executive chairman of the American Automobile Association. "The first cry that goes up, as a rule, when such an accident occurs, is that the driver of the car was at fault, when as a matter of fact in a large majority of cases the person injured was to blame.

"Over a certain period of time in which 7,327 accidents involving private automobiles occurred, the police department of New York City found by thorough investigation that in 450 cases the driver of the car was to blame; in 3,168 cases the person injured was to blame; and in 3,683 cases the cause of the accident was unknown. With the heavy preponderance of blame placed on the person injured in the known causes of accidents, it is but fair to presume that the injured person was to blame in more than 50 per cent of the remaining 3,683 cases, basing this on the most conservative estimates. During the same period of time, in which 1,209 accidents involving taxicabs occurred, the cause for 51 such cases was traced to the driver, while 437 cases were blamed on the person injured, and the cause of 714 accidents remained unknown.

"These figures serve to emphasize the contention of the A. A. A. that no traffic regulation is complete until it provides a penalty for jay-walking. The jay-walker in my opinion is the most serious menace to traffic safety in the United States today.

"The automobile has always been a subject of class legislation. It is a shining target for every legislator seeking a new means of revenue. It pays more tax than any property of similar value in the world and is subject to more regulations than any other means of conveyance.

"The American Automobile Association stands for obedience to the law and for observance of all traffic regulations, but we feel that if a motorist is to be fined for disobedience of a traffic signal, then the pedestrian should be fined for jay-walking across the street, putting himself as well as every motorist in that immediate vicinity in danger."



Sir Francis Drake greeted by the Indians of "New Albion"

The Background of Romance

Symbols of Beauty in Landscape of the Golden State

By VONARD FRASER

LIKE Shakespeare's phantasy that gives to "airy nothing a local habitation and a name," the halo of romance hovers over many of the districts of California and lends an attractive air that makes them more alluring to the imaginative and more full of vision to the hardened traveler.

No nation loved its own country more than the Greeks of the time of Homer, and they expressed their regard in personification of every vale and hill, every forest and inlet. The Greek mythology is, after all, purely a Nature religion, and the Greek regard for Nature gave us one of the greatest literatures of the world.

The snow-crowned peak of Mount Olympus, not as high as some of the crowns of the Sierras, was the ideal mountain of the ancient world, and it was fittingly called "the home of the gods." The vales of Tempe and of Arcady, sung by Theocritus and Bion and Moschus in flowing Greek and by Keats and Shelley in modern poetry, were the abodes of the Muses, for there Nature was at her best with wildflower

and fern and grass-carpeted slopes well adapted to the dithyrambic dance and the Miltonic "Come and trip it as you go on the light, fantastic toe."

Symbols of Beauty

Every stream boasted its god or goddess, custodians in that infant world of the symbols of beauty. Every tree had its dryad, every pool its Narcissus, every canyon its haunting Echo. The Greeks worshiped the beauty of the fields in Demeter and Persephone, even the caves had their oracles, and the winds and the sea had their governing deities. It was a world of poetic appreciation of the beauties of Nature, and the Greeks, as it was said of the poet Keats, "never saw an oak but saw the hamadryad."

In natural beauty Greece does not excel California; in fact, her vaunted dells and meadows and streams do not compare in extent and in number to those on the Pacific shores. California has a score of valleys that might house the Muses of ancient Greece, a hundred streams that mirror the face of Arte-

mis and of Phoebus Apollo and Greece has no grandeur of scenery such as the tourist may find in the great gorges of the Sierras, the Yosemite, the Hetch Hetchy and the canyons of the Tuolumne, the Kings and the Kern.

The great lure of the land of Greece lies in its romantic background. It is a storied land of sprites and heroes and superhuman beings of literary fame.

So it is with that barren plain on the southern side of the Hellespont in Mysia. Only a few ruins mark the mound where once stood the storied city of Troy. From the mound of Hissarlik a dull prospect extends. Yet how many thousands of tourists have made the somewhat dangerous passage across the Ægean Sea to view that heap of stones that marks the site of one of the most famous of the centers of Oriental culture of the ancient world.

The Romantic Background

European tourists are inspired by the romantic and historical background of the countries which they

visit. They may not admit an interest of this kind, they may even go out of their way to deny it, yet the fact remains that the heaviest traffic of tourist travel in Europe is over the most famous of the districts in literature and history—London to Paris, to Berlin, to Vienna, to Lucerne, to Rome, to Athens, with perhaps a side excursion to the bowlders piled up by Old Man Cheops on the plains of Gaza.

In what respect does this apply to California and California touring?

Many a motorist in traveling about the state knows little of the romantic background. He may recall that the first capitol of the state was in the old town of Monterey, he may have a vague notion or two about some Indian battles, and he may have visited a few of the missions and learned somewhat of the work of the early missionaries in the state. But the great romantic background of the state is a sealed book.

No single volume deals with the whole field of California literature and history. No complete story of the remarkable development of the Pacific slope has ever been written. Yet there are a few salient facts about California with which every California motorist should be acquainted if he expects to get the most out of his tours in the way of enjoyment, if he expects to be able to plan his trips intelligently for a comprehensive idea of the infinite attractions which California has to offer.

Cabrillo in 1542

The history of California, then known as Alta or Superior California as distinguished from Lower or Baja California, begins with the expedition of Juan Rodriguez Cabrillo, who, on

June 27, 1542, sailed up the coast from Lower California and anchored in San Diego Bay. In November of the same year the explorer reached Point Pinos and entered Monterey Bay. He then proceeded northward, but was turned back by stormy weather as he was about to enter the Golden Gate. Cabrillo died on the Santa Barbara Islands on January 3, 1543.

Cabrillo's lieutenant, Ferrelo, pressed on northward with his two vessels and named Cape Mendoza, which is now known as Cape Mendocino. He sailed as far as the southern Oregon line, but was forced by a scarcity of provisions to return.

From a rare volume which was published in Spain in 1510, we find the first reference to California:

"Know, then, that on the right hand of the Indies, there is an island called California," Professor Rockwell D. Hunt translates the passage, "very close to the side of the Terrestrial Paradise, and it was peopled by black women, without any man among them, for they lived in the fashion of Amazons. They were of strong and hardened bodies, of ardent courage and great force. The island was the strongest in the world from its steep rocks and great cliffs. Their arms were all of gold, and so was the harness of the wild beasts which they tamed and rode. For, in the whole island, there was no metal but gold. . . . In this island, called California, there were many griffins, on account of the great ruggedness of the

country and its infinite host of wild beasts such as never were seen in any other part of the world. . . . Every man who landed on this island was immediately devoured by these griffins."

Griffins and Amazons

Now the motorist of today may not expect to see any griffins in his peregrinations about the country, neither may he encounter any of the Amazonian inhabitants described by the novelist, but the fact that four hundred and twelve years ago California was looked on as a "golden land" adds an interest to the study of the state's development.

This romance of the Son of Amadis of Gaul was the "best seller" in the days of Cortez, and it was probably due to this fabled description that the name of California was bestowed on the Pacific Coast district, which at the time of Cortez was looked on as a great island.

Portuguese discoverers had affirmed the existence of a northwest passage from the Atlantic to the Pacific, and it was due to the zealous hunt for this fabled strait that Sir Francis Drake, a British navigator, was led to make an expedition which resulted in his land-



Sunday at the mines in the Glorious Days of '49

ing under the shadow of Point Reyes in the quiet harbor which still bears his name.

The "Golden Hinde"

Drake in the *Golden Hinde* plundered the ships which were encountered on the long trip around the Horn and, fearful of capture, essayed to locate the northwest passage by which he might pass in safety to the Atlantic and thence home to England.

Bad weather led him to turn back as did Ferrelo at the coast of Oregon and seek for shelter. He anchored in what is now known as Drake's Bay and spent a month's time there refitting the vessel and securing supplies for the homeward journey. Here he found the aboriginal inhabitants of California ready to bow down and worship him as a god. Drake called California "New Albion" and announced it as a possession of England, not knowing that many years before him Cabrillo had seized the land as a possession of the Spanish crown. Drake returned from the California coast by way of the Cape of Good Hope, landing in England on September 26, 1580, having accomplished the feat of the circumnavigation of the globe.

Vizcaino's Expedition

On the trail of Drake came a Spaniard, Sebastian Vizcaino, on the fifth day of May, 1602. He first visited the harbor of San Diego and Santa Catalina Island and the bay of San Pedro. He then sailed up the coast to Monterey, where he records encountering grizzly bears with footprints nine inches across and elk with three-foot antlers. He sailed as far north as Cape Mendocino, only to be driven back by the storms.

The native races whom the explorers of the California coast encountered were Indians who built their houses of adobe and were skilled in weaving baskets. One of the Jesuit missionaries who visited California in the early days of the last century characterized the native Californians as stupid and insensible. "They are ignorant, they lack reflection, they are inconstant, impetuous, and blindly obey their appetites," he wrote. "They have an abhorrence for all labor and fatigue, an incessant love of pleasure and amusement of every kind however trifling and brutal. The extent of their desires is to get the present day's food without much fatigue, taking little care for that of the ensuing day."

The tribes of northern California included the Klamaths, the Tamal, the Shastas and the Modoc, and Bancroft describes them as "tall, muscular and well made, with a complexion varying from nearly black to light brown"; they were superior in every way to



An 1856 Quartz Mill, Grass Valley, Nevada County. Drawn by A. Nahl in 1856

the tribes of the south. There were scores of small tribes, and it is said that at the Mission Dolores alone there were nineteen different languages spoken by the Indians resident there.

The clothing of these aboriginals was usually a one-piece garment of deerskin, and women as well as men tattooed their bodies.

Wild Game Plentiful

It was natural that these early inhabitants should be slothful in habit and lazy in every degree. Game was plentiful, deer, bear and antelope supplying their table, and a variety of wild berries and acorns and pine nuts were easily secured. Fishing was a common practice of the Indians, and for salads the social banquets of the elect were graced with grasshoppers and yellow jackets.

Historians tell us that California was more densely populated than any other portion of the United States in the days of the Indian.

Following the voyage of Vizcaino in 1602, Spain looked forward to colonizing the Californias, but it was not until 1697 that the actual steps were taken by the Jesuit fathers to assume possession of California and proceed with the plan of civilization. The Jesuits were expelled in 1767, and the missionary work was turned over to the Franciscans. In 1768, Galvez, Portola and Junipero Serra set out on an expedition from Mexico into California.

Chain of Missions

The first of the chain of missions, that of San Diego, was founded July 16, 1769. From there the Spanish parties advanced northward, establishing mission stations all along the coast. Their methods were simple. "A cross was set up," writes Helen Hunt Jackson; "a booth of branches was built; the ground and the booth were conse-

crated by holy water and christened by the name of a saint; a mass was performed; the neighboring Indians, if there were any, were roused and summoned by the ringing of bells swung on the limbs of trees; presents of cloth and trinkets were given them to inspire them with trust; and thus a mission was founded. Two monks were appointed to take charge of this cross and booth, and to win, baptize and convert and teach all the Indians to be reached in the region. They had for guard and help a few soldiers, and sometimes a few already partly civilized and Christianized Indians. Several head of cattle, some tools and seeds, and holy vessels for the church service completed their store of weapons, spiritual and secular, offensive and defensive, with which to conquer the wilderness and its savages."

The story of the founding of the missions is one of the most interesting of the diversified records of California. About them grew up the pueblos, wherein the colorful life of old Spain was reproduced. The Indians were given food and clothing and instruction.

Trades were plied indoors and out. There were farmers, herders, vintagers by hundreds, children in schools, women spinning, bands of youths practicing on musical instruments, and in the evening all sorts of games of running, leaping, dancing, ball throwing and picturesque ceremonies.

Decay of the Missions

On August 17, 1833, after Mexico became independent of Spain the missions were secularized, and gradually they began to decay. The missions which had more than thirty thousand Indians under their care in 1834 had but some four thousand in 1842 after the mission stations had been placed under the control of the civil authorities. Where they possessed 423,000

head of cattle in 1834 they had but 28,000 in 1842, and where 172,000 acres were under cultivation in 1834 less than 10,000 were tilled by the civil authorities.

One of the picturesque civilizations of California was that of Spain. In that régime were developed the vaquero and the rodeo. The vaqueros were the centaurs of California and the rodeos the Olympic games. The choral dance of the Greeks was replaced by the fandango, and hospitality was the rule throughout the length and breadth of the land.

This was the day of Arguello; and one of the most interesting love stories of the New World was enacted under the shadow of the walls of the Presidio of San Francisco, and the adobe structure in which the romance was born is still standing. It now houses the officers' club within the Presidio grounds.

In this romance, which Gertrude Atherton has woven into a novel, the Russian occupation of California is connected with the story of the Spanish occupation. For it was the representative of the Czar on the Pacific Coast who became the suitor of the young sister of Don Luis Arguello and who came to treat of trade and remained to treat of love. The little graveyard in the convent at Benicia is the last resting place of the heroine of the tale; Don Luis is buried in the church yard of the Mission Dolores; while Rezanov, the Russian, perished on his way back from Russia to claim his bride of Spain.

Russians at Fort Ross

It was in 1806 that Rezanov visited the Presidio of San Francisco, and in 1812 representatives of the Russian Fur Company with headquarters in Alaska sent an expedition south to Bodega Bay, without seeking the permission of the Spanish Government, and settled ten miles north of the mouth of the Russian River. The

land occupied by the Russians is said to have been purchased by the traders from the Indians for "three blankets, three pairs of breeches, three hoes, two axes and some trinkets."

Fort Ross, sixty-five miles from the Mission Dolores, was established there and was the headquarters of the Russian trading station in California. Spain did not relish the Russian invasion of her territory, and in order to keep the Russians within bounds the missions of San Rafael and Sonoma were founded, ostensibly for the civilization of the Indians but more in the way of military stations from which vantage points the proceedings of the Russians might be carefully watched.

The old Greek church where the Russians worshiped is still standing as well as the ruins of the old barracks in which the soldiers were quartered. Captain John A. Sutter in 1839 bought most of the possessions of the Russians for use in connection with a colonization scheme at Sacramento, and in 1841 the Russians returned to Alaska.

Seizure of California

The United States about this time turned an eye toward California as a possible acquisition for colonization, and the subsequent war with Mexico led to the final seizure of California as American territory. Commodore Jones in 1842, led by a rumor that war had broken out between Mexico and the United States, sailed up to Monterey and raised the American flag on the customs house, but subsequently lowered it when he discovered that the war had not materialized.

Following the admission of Texas into the Union, Daniel Webster wrote to his son: "You know my opinion to have been, and it is now, that the port of San Francisco would be twenty times as valuable to us as all Texas." So the idea that California should be acquired by the United States grew rapidly. France and England were

thought to have designs on the territory, and the United States did not wish the rich Western coast and its fine harbors to be gathered in by a foreign power.

Immigrants from the Eastern states had been coming into California as early as 1814. James Gilroy was one of the first, and his name has been perpetuated by the town which has been called after him. John Bidwell, after whom Bidwell Park in Chico is named, came out to California in 1841. His party entered California along the banks of the Stanislaus River and advanced to the coast under the very shoulders of Mount Diablo over what is now the Marsh Creek Road. In fact, the party was entertained at the home of Dr. John Marsh, who was one of the early settlers of the region. The Bidwell expedition was the first overland expedition to enter California.

The chief objective of immigrant trains coming over the Sierras into California was Sutter's Fort, established by Captain John A. Sutter on the site of what afterwards became the city of Sacramento. It has since been made a park and the old buildings have been restored and converted into a museum of the relics of the days of the gold rush. Here you will find several of the old stage coaches that traveled the narrow roads between the mining stations, and souvenirs of every sort dealing with the stirring times of the Argonauts.

Death Valley is one of the unique portions of California. It seems a veritable portion of the Great Desert of the Sahara brought over and dropped down in the midst of a state renowned for its fertile soil and its green hills and valleys.

It first appears in the romantic story of the state with the expedition of the Manly party in 1849. William Manly was one of those Easterners inspired with the gold fever and he joined a pioneer party as teamster.

After crossing the Rockies, the party discovered a tiny boat on the Green River and they supposed that, naturally, this river must find its way eventually into the Pacific, so they decided to take this method of making their last drive to reach the golden California.

There were seven in the expedition. They encountered the swift-rushing Colorado and the boat was abandoned. Warned by an Indian of the folly of their plan, they set out for Salt Lake and joined the Bennett party.

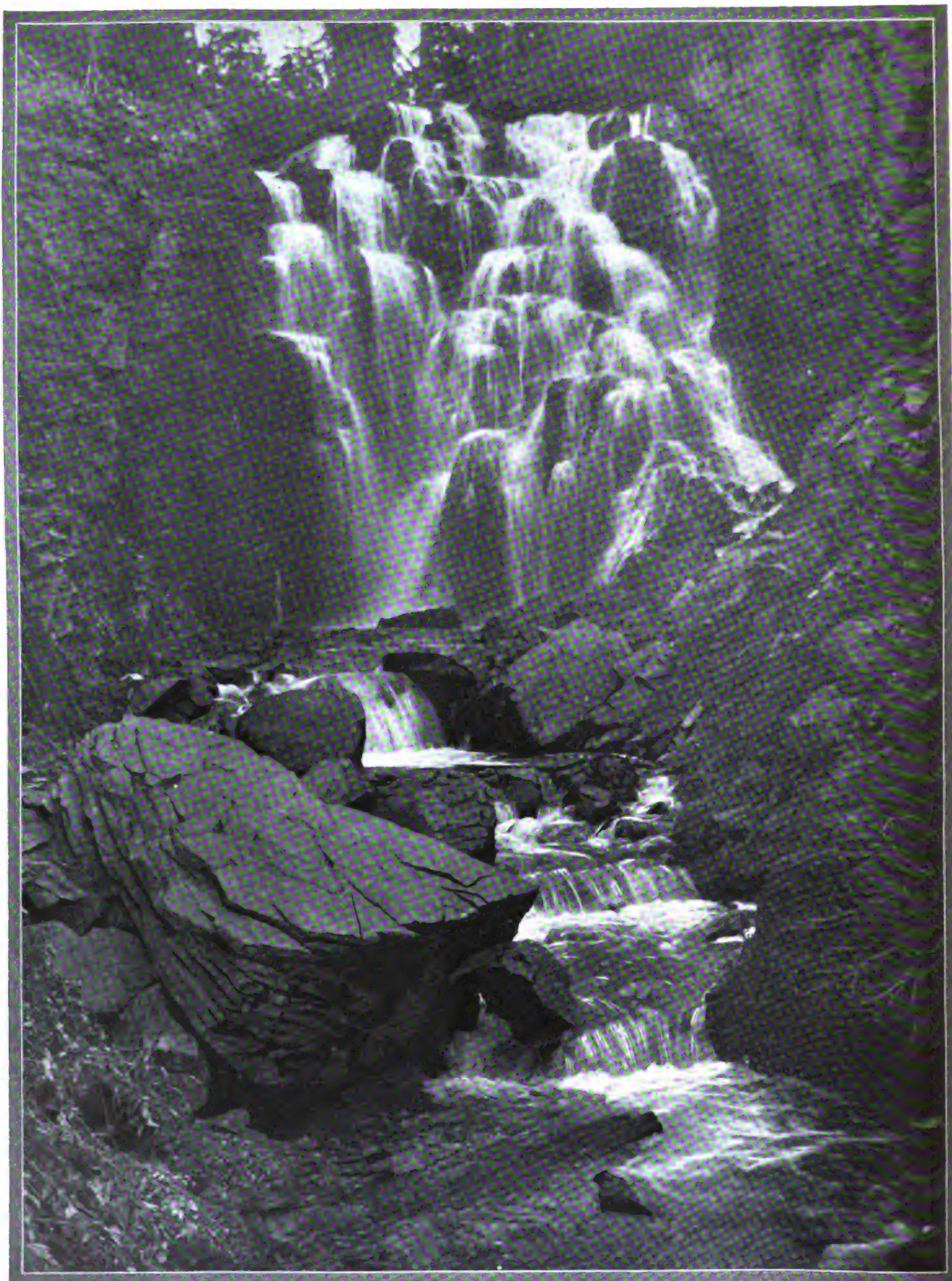
A Misleading Map

The augmented train followed a map that led them to believe that they could reach Los Angeles by means of a trail over the mountains into the

(Continued on page 30)



George Town, El Dorado County, in 1856. Drawn by A. Nahl in 1856



Kings Falls, Lassen Volcanic National Park

Photo by H. S. Lanton

The Waterfalls of Mt. Lassen

By E. V. WELLER

*Under the shadow of Giant crags,
Threading the Realm of Snow,
In a wild cascade
Through a fern-clad glade,
I race to the vale below.*

*Here were the Heavens and Earth at war,
Thunders and lightnings dire,
And the sky grew red
With the fierce rays fed,
Lava, and ash and fire.*

*Old are my forests and rock-bound hills,
Hoary with years my span,
Since the winds leaped forth
From the ice-clad north,
And Time and the World began.*

*Mine are the joys of the Alpine peaks,
Brothers of Storm and Cloud,
And my waters beat
On this ancient seat—
While Man in his awe is bowed.*

*Born of the mists and the springs of earth,
Cloistered in canyons dim,
And my teeth gleam white
In my foaming flight
With Time to Eternity.*

*Vision of Power in my roaring flood,
Symbol of Life's Great Quest,
And my Spirit thrills
Through a thousand rills
Reborn in the wave's white crest.*

*Tinctured with palette of rainbow hue,
Fragrant with zephyrs kissed,
While the mirrored sky
And the stars pass by,
Enrobed in a veil of mist.*

*Through me the Mother of All doth speak,
Molder of stone and clod,
Through the Day's glad light
And the surge of Night,
For I am the Voice of God!*

Touring in December

Mountain Passes Closed by Snow and Shorter Tours Are Popular

CALIFORNIA knows no closed season for touring. Yet she knows the value and comfort of the closed car, and she appreciates the tours that are not long enough to chill yet long enough to provide the pleasure of the wintry atmosphere that heralds the approach of the holiday season.

Eastern tourists often contend that California has no change of seasons, yet if they knew California better they would discover how far their contention is amiss. A few hours will bring you from season to season in the winter-time. You may bask in sunshine in the valley of the Sacramento, and within three hours' driving pass into the blizzard of the Sierra. You may almost adjust your temperature to your own ideas of comfort with the aid of your motor car and the network of highways throughout the valleys and mountains of the state.

The coast country along the San Francisco peninsula offers many an opportunity for winter touring, and if the trips are carefully chosen no duplication of routes will be encountered for a score of visits to the scenic vantage points of that section. Half Moon Bay is always an interesting trip whether it be made by way of the Spring Valley Lakes or the Coast route along the old line of the Ocean Shore Railroad. La Honda and its Big Trees offer an ever recurring lure, as does Santa Cruz and the ocean district thereabouts.

The Monterey Trip

Perhaps the most popular of the week-end trips about the bay district is that which includes Del Monte and Monterey, Pacific Grove and Carmel. Monterey, the old capital of California, is replete with interesting relics of the early days in the state. Colton Hall, the old customs house, the first brick dwelling and the first frame structure in California, all are reminders of the days that have been, and here is also the theater in which Jenny Lind is said to have sung to the miners.

The world-famous Seventeen Mile Drive is a scenic route and can be made in any weather. The district around Monterey is particularly fortunate in having a climate that knows no great extremes in heat or cold, and this makes a pleasant excursion for those who wish to "thaw out" after a cold sou'easter sweeps in through the Golden Gate.

On the Alameda County side there are innumerable short trips for the

A Few Short Trips

HERE is a suggestive list of tours for the month of December, when the weather conditions are not always dependable and the Sierra regions are closed by snow:

Santa Cruz and the Big Trees, Monterey, Pacific Grove, and Carmel.

Half Moon Bay, La Honda, San Mateo County in general.

Walnut Creek, Martinez and Borden Highway to Stockton. Byron Hot Springs and Contra Costa County in general.

Sausalito to Napa via Black Point Cut-off, Calistoga and Petrified Forest to Santa Rosa and Petaluma.

Coast and Valley routings to Los Angeles and San Diego.

Mount Hamilton, provided there are no storms.

Sunday excursion or the week-end. Walnut Creek, Martinez and the Borden Highway to Stockton, all are easily made, rain or shine, and Byron Hot Springs and Contra Costa County in general offer interesting objectives for the traveler.

Across the Golden Gate the many paved highways of Marin County are attractive places to visit, while the opening of the Black Point Cut-off makes it possible to cross over into Napa County and be sure of easy going, stormy weather or not.

Coast and Valley

Both the Coast and Valley highways to Los Angeles are all-weather routes, the one passing through one of the richest agricultural districts in the world and over the famous Ridge Route, while the other follows the paths of the Franciscan friars, the mission trail, El Camino Real.

There are longer tours, too, that may be made in the rainy season without fear of difficulty. The paved highway that extends to Sacramento and beyond to Chico, both the east and west side routes, traverses a region rich in historic and scenic interest and the motorist may feel perfectly sure that he may return without the danger of being mired in for an indefinite period.

Winter touring, December touring, is one of the most pleasant of the events of the motoring year if you live in

California. Motorists out in this section of the country can motor every day of the calendar. Rain is no deterrent and the snows keep within the boundaries of their outposts in the High Sierras.

Marin County, San Mateo County, Alameda and Contra Costa Counties, all are in a day's driving distance for the winter tourist and there are any number of interesting trips that can be made in these counties alone.

Into Muir Woods

Muir Woods is always beautiful, whatever the weather, and probably more beautiful in the winter time than in the dust of the summer season. The new Tamalpais road will make that scenic peak open to motorists all seasons of the year, while the ride through the military reservation to the beach or to the lair of the Olympic Club at Stinson Beach are most pleasant journeys of the afternoon-round-trip type.

Then over in the Contra Costa hills around the base of old Diablo you will find much of interest and pleasure. Martinez and its sister city of Benicia across the channel, are two of the oldest towns in California, and the Marsh Creek district was the country to which General John Bidwell came on the first overland immigrant expedition that entered the Golden Gate.

Half Moon Bay and Salada Beach and the dozen or so little inlets along the coast highway, reached by way of the Spring Valley lakes through San Mateo County, make up an ever-pleasant trip for a Sunday afternoon while the educational institutions of the University of California at Berkeley, and Leland Stanford, Jr., University at Palo Alto, are well worth a visit.

The Bay district is as full of interesting material for the motorist, interesting little spots which the general tourist does not see that one might spend a lifetime in touring within a few hours ride of the Golden Gate without repeating a single expedition.

Have you ever visited the island city of Alameda? Have you ever gone over the famous Tunnel road and the Sky-line boulevard of Oakland and Berkeley? Have you ever toured through the beautiful home district of Burlingame and Hillsborough? There is an endless array of tours offered for your pleasure for a rainy day, or for a day when the wind blows chill if you do a little planning beforehand.



Center—Fully equipped for every occasion or change in temperature is Milady Motorist when she wears this smart three-piece motoring costume of Shelland finish Scotch tweed. The over coat is lined throughout and can be worn with a belt.

Left—Back to Nature is so much more fun when one is properly equipped for it. And what could be more charming for a day's jaunt into the country than this mannish top coat of plaid Harris tweed, snugly belted and properly equipped with slip pockets?

Right—For town or country wear, this tweed suit with an unusually long coat is not only suitable but exceedingly charming. The coat can be worn with or without a belt, and when worn separately, makes an excellent walking coat.

—Models from Abercrombie & Fitch, New York.

A FASHION expert recently stated her opinion that the present-day styles more nearly reached perfection than any other mode ever devised, at least as far as common sense, naturalness and beauty of materials are concerned.

Of course, in bygone days someone may have expressed the same idea: in the days of the hoop-skirt horrors some sincere but misguided enthusiast may have lauded the outrageous mode

Milady Motorist

By EDITH M. GARFIELD

to the skies; and, without a doubt, there were perfectly intelligent people who saw actual beauty in the wasplike-waist, padded-hip-and-shoulder days.

Even today there are eccentric people who like to swathe themselves in the long, clinging, street-sweeping

skirts, just as the flappers courted second childhood with their above-the-knee skirts; but the really well-dressed people—the ones who display good taste and intelligence in their clothes—are the ones who are conservative and who wear what is becoming rather than what the style-makers tell them to.

Irene Castle, who is one of the best-dressed and smartest women in the country, is a strong advocate of dress-

(Continued on page 38)

The Oldtimer Speaks

Patience a Lost Virtue with Motorists Nowadays

"THE present generation possesses more impatience and intolerance than we had thirty years ago," declared the Oldtimer as he carefully filled and relighted his ancient briar.

"Back in '96 we had a few motor cars or 'horseless carriages' as we dubbed 'em then, and the young fry of today ought to have gone through some of the experiences I had to teach 'em a few tricks.

"Patience? You had to have great gobs of it in those days. And even that didn't always bring results. Maybe some o' you boys remember back as far as 1900, and the fun we used to have even in that advanced stage of the motor car with keepin' the pesky thing rollin' over the dirt.

"Well, a neighbor o' mine, way back in '97 in a little town of Ohio, was the proud possessor of an electric. Not one of those baby carriages with the shinin' sides and spick and span glass showcase effect you see nowadays, but a real he electric vehicle.

A Gas Electric

"Perhaps I ought to call it a gas-electric, for the old boy had a gasoline lung in front of the old buckboard and under the back seat was a litter of black boxes which furnished the real motive power.

"He asked me to take a ride in it once. We spent about half the morning in getting the gasoline engine to kick over, and we had to let it run for the rest of the day to charge the batteries so we could shove off in the world. 'Bout five o'clock, on a summer day, my friend decided the jugs of acid and water and junk had enough juice in 'em to tote us around and we climbed in.

Proud Motorists

"How proud we both were when we ambled down the Main street of the little village at the marvelous speed of about three miles minus per hour. Everybody came out on the front porch to look us over, hearin' the chuggin' of the vile-smelling engine in front.

"The dogs came out to bark at us and we scared one horse almost into hysterics. But we drove clear into the center of town, a whole half-mile, turned around by goin' around the block, and got half way home before the blamed thing stopped.

"Proud? You bet we were, even

though we had to push the con.ounded thing the rest of the way home.

"It wasn't all smooth ridin' either in those days. No tires on most of the busses, except the regular steel tire of the ordinary buggy, and the roads were almost as bad as some of the early attempts at highway building after a flock of motor trucks had chopped the oil and sand into hunks of boulders.

You Learned Patience

"Sure, you learned patience in those days.

"I remember my first motor car with pneumatic tires. They were bike tires, the same old kind we had used on the family bicycle, but they had to carry a heavier load, and the pumps weren't powerful enough to pile the air into 'em any too tight. And punctures? I was positive some days when I was touring around in it that some evil-minded kid had set out ahead with a can o' nails and carpet tacks to make life the more miserable for me.

"Believe me, we were mechanics in those days. There weren't garages on every corner then, and you had to carry all the necessary tools along, and almost a complete extra car to fix up repairs on the road. I remember reading an account of a race they held with those early chariots to the effect that the judges were kept busy picking up parts of cars they found scattered all along the course when they followed the racers into the home plate.

The Shell-Game Guy

"Those were the days when the automobile dealer was classed with the shell-game guy and the faro dealer. Everytime he sold a car he hid in the barn for a couple of days till the poor sucker was safely out of the way or had died of disgust after the contraption had refused to budge a few times.

"I know one dealer who sold a car to a chap in the next town and delivered it with a horse rather than take a chance at driving it himself.

"I'll tell the world, with some of those busses it was as much as a man's life was worth to get into one. The old tonneau wasn't tied on any too tight, and a bad jolt was likely to land you in a nearby mud puddle while the steering knuckles of that day and age had a curious idea that they were under the eight-hour law or something like that,

and quit business regularly on a trip of any length.

Reckless Speed

"Speed? O boy! how we used to tear down the highway! Fifteen miles an hour was the limit of most of them, and this hair-raising effect was only produced by picking out a favorite hill and gathering momentum for about a mile before you gave her all the gas you could.

"You know, in those days, the motor car salesmen always demonstrated on a down grade. Hill climbing was a thing for horses or pedestrians. Motor cars were on the level in that phase of the question anyhow. Climbing steep hills is a late invention brought on by competition and a few modern improvements in the engine department.

"What a sight it was to see that old Duryea in the Barnum and Bailey circus drawing the crowds as a rival to the elephant and the bearded lady! Barnum was the first motor car salesman we ever had because the advertising that little old car got for the industry that developed later was really what put the thing over.

"That famous expedition across the continent, the first of its kind, meant as much to the automotive industry as did the Argonaut trains to California. There's an element of humor in the familiar painting of that historic trip. The trail-blazing chariot wasn't posed by the artist as it was galloping madly over the plains. Oh, no! The artist was a realist and he portrayed the driver and his steed halted on the road for the repair of a tire.

"What wouldn't we oldtimers have given for a casing that wouldn't be always reminding us that our natural gait was afout and constantly abstracting the joy out of motoring.

"Yes, what wouldn't we have given for windshields and good springs, and real upholstery and good roads. They say the early bird always catches the worm, but believe me, son, the worms were too fast for us when we drove around in '96.

"You've got to hand it to the old busses, though! They did some great pioneering and I've got a warm spot in my heart for that one-lunged contraption I used to own. Don't be so impatient, son, the next time you find some little thing go wrong with your spanking new car. Just be glad you own a modern one that isn't in the repair shop twenty-three hours out of the twenty-four."

Safety Department Organized

Automobile Club Cooperating in Educational Campaign

Two hundred citizens have been enlisted for a permanent safety campaign in San Francisco and are now cooperating with Captain Henry Gleeson of the San Francisco Traffic Bureau in an educational campaign to reduce the number of automobile accidents.

The plan, as evolved in San Francisco, will be carried out in other cities throughout the state.

A Public Safety Department has been organized by the California State Automobile Association, headed by Percy E. Towne, with D. V. Nicholson as manager. This department has distributed to all members of the Public Safety Committee postal cards with the common infractions of the traffic laws listed thereon. It is only necessary for the committeeman to check the infringement noted, indicate the time and place and post the card at the nearest mail box.

Club Keeps Record

The Automobile Club keeps this record and writes the motorist a letter calling his attention to the infraction of the law and urging him to cooperate with his fellow motorists in this permanent safety movement. Repeated offenses result in the records being turned over to the police for such action as they may see fit.

The committee has been asked to report to the Association's Public Safety Department these violations:

Fast driving.

Reckless driving.

Passing street car taking on or discharging passengers.

Failed to stop after accident.

Only one headlight—no lights—no rear light.

Drove through safety zone.

Passed moving vehicle on right.

Cut short corner when turning to left.

Drove on wrong side of street.

Turned at other than street intersection.

Refused to give way to faster-moving vehicle—street car—front car.

Failed to signal before turning, stopping or backing.

Left curb and entered traffic without signal.

Muffler open.

State license number defaced or mutilated.

Passed street car on left while taking on or discharging passengers.

This committee will be a permanent organization, each committeeman being known by a number and being pledged not only to set an example to other drivers but to report all violations coming to his notice.

Similar committees are to be appointed in Fresno, Oakland, Sacramento, Stockton and elsewhere where traffic conditions warrant.

Ignorance of the Law

"Public sentiment," declared Chairman Towne in his letter to members of the safety committee, "has urged the Police Department and the courts to



Director Percy E. Towne, Chairman Public Safety Department, California State Automobile Association

extraordinary efforts designed to check the constant violations of the traffic laws and ordinances. Heavy fines and jail sentences are demanded and applauded.

"We have always believed in proper and necessary punishment for offenders, but have always felt that ignorance and thoughtlessness played a large part in causing violations of traffic laws and that a proper plan of education, warning and appeal should materially reduce the number of such infractions.

"Each person requested to act as a member of this Public Safety Committee is first requested to make his own conduct a good example to others. He should be sure that his brakes, lights, horn or other signaling device, number plates, registration blank, operator's license, etc., are all entirely in order. He should consider his own methods of operating for the purpose of deciding whether he can justly criticize

or report upon the driving of others. It would be embarrassing to the committee to have one member make a report of misconduct upon the part of another member of the same committee, although it would make no difference as to the manner of handling the case. It must be borne in mind also that the Association in dealing with the reports will have in mind only the matter of the truth or falsity of the charge. The standing or connections of the person charged will not be taken into consideration except for the purpose of determining his credibility if he questions or denies the occurrences reported.

Eight Killed Every Month

"During the first ten months of 1921 fifty-four men, women and children were killed on the streets of San Francisco. This number has increased to eighty-eight for the same period this year. During this period in 1921, 1,366 persons were injured as against 1,629 in 1922. From these figures you will appreciate the necessity for motorists to 'clean house.'"

"Traffic accidents resulting in injuries and deaths caused by careless motorists and careless pedestrians show an alarming increase in the city and county of San Francisco," declared Mayor Rolph in an appeal for cautious driving.

Educating the Motorist

"The Automobile Association through education is undertaking to impress upon the motor-driving public the necessity for careful driving and upon the pedestrian the importance of eliminating 'jay-walking.'"

"From no source can safety education come with better grace than from the organized motorists of the city. It is planned to have a large committee of citizens which will operate under the central office of the Association for the purpose of reporting violations of traffic, speed and light ordinances and city laws.

"The committee in question will merely supplement the work of the Traffic Bureau under the efficient direction of Chief of Police Daniel J. O'Brien and Captain Henry Gleeson. The Police Department and judges should have the loyal cooperation of the citizens of San Francisco in enforcing the traffic laws, and the California State Automobile Association in its campaign of education should have equal support and encouragement."

The Mathematics of the Motor Car

Some Formulae of Interest to the Man Who Drives an Automobile

MANY times does the motor car owner wish that he could recall or could locate a formula that would permit him to compute some problem of the motor car. But the material is not always lurking in an accessible place, and a great deal of time and trouble is lost in locating the source of the rule or method.

One of the most frequent calls that a motorist makes on mathematics is to measure the horsepower of his engine. There are several methods of ascertaining this, the most popular of which is the S. A. E. formula, which is as follows:

The horsepower equals the diameter of the cylinder squared times the number of cylinders divided by the constant 2.5.

For example: If the bore of the cylinder is 5 inches, and the car is a six-cylinder type, the problem would be thus:

Horsepower equals 25 times 6 (or 150) divided by 2.5, or 120 h. p.

Another Formula

If the stroke and speed as well as the diameter of the cylinder are to be considered, a far more accurate method of ascertaining the horsepower is the formula:

H. P. equals bore or diameter squared times number of cylinders times length of stroke times revolutions per minute, divided by the constant, which in the case of four-cycle engines is 13,000, and for two-cycle engines is 10,000.

The first formula given here is that which is used by manufacturers and state license bureaus throughout the country.

Piston Displacement

Piston displacement is another mathematical problem with which motorists often desire to be acquainted. The formula for this is as follows:

The diameter or bore of the piston squared times the decimal .7854 times the stroke in inches times the number of cylinders equals the piston displacement.

Here is a little formula that comes in handy for the mathematically inclined motorist. It is used in finding the speed of the car. No, brother, the motor cops don't use it and you can't make it take the place of the speedometer when you're traveling down the highway at thirty-five miles or so, but nevertheless it'll give you the speed, provided you know one or two other figures about the operation of the engine. Here it is:

Revolutions of the engine per minute times the diameter of the rear or drive wheels expressed in inches times the decimal .002975 divided by the ratio of the drive shaft (the number of times the crankshaft turns to one turn of the rear axle) equals the number of miles per hour the car is supposed to be running.

What's the Grade?

Nowadays with the advent of the car that climbs telegraph poles and thinks nothing of climbing all of San Francisco's world-famous hills in high gear, the gradient problem enters into the story. Then, too, a motorist on a long tour likes to be able to tell 'em at home how steep the grade was the little bus made in second without a murmur of protest. Well, here's the way you figure it out:

The grade of a hill is always spoken of in terms of percentage. Furthermore, a hundred per cent grade isn't a hill that's straight up. A hundred per cent grade is a hill that climbs a hundred feet in a hundred feet but the base of the hill is a hundred feet away from the base of the altitude line of the hill.

So a five per cent grade, which, by the way, is no little hill, means a rise of one foot in every twenty. The steepest hill in San Francisco, the Duncan Street grade at its very worst, has a gradient of about fifty per cent.

Suppose you are climbing the Yosemite Valley road, making a hard battle with a stiff hill on the Oak Flat road. You may want to record how bad it really was. If you are mathematically inclined and want to be prepared to know how the next time you run across a grade you wish to measure, carry along a pocket level. Then with the aid of a straight stick you can easily figure out the rest.

Suppose the stick is ten feet long, no more, no less. Put one end of it on the road and check it level with your pocket instrument. Measure the distance the other end is from the surface of the road and multiply this by ten. Your result will be the percentage of grade.

For example: You use a ten-foot stick and you discover that when it is level, one end is a foot from the ground. Multiply this by ten and you have ten, which is the grade per cent. That's an easy one, isn't it?

The Steepest Hill

The steepest hill a motor car could possibly climb, according to engineer-

ing figures, is 66 $\frac{2}{3}$ per cent. At this point gravity overcomes all possible traction and the wheels would spin without giving the car any forward movement. Don't try to climb any hills as steep as that. It can't be done.

The mathematics of motoring is a pleasant theme for a day at home or in camp. Have you ever enjoyed the fun of figuring out the time you saved by making forty miles an hour instead of thirty over a stretch of say twenty miles? At forty miles an hour you naturally would travel the twenty-mile stretch in a half hour. So if you traveled along at a thirty-mile gait you would reach your destination in forty minutes. So you saved ten minutes by the extra ten miles an hour. One of the problems a dyed-in-the-wool speeder should be made to figure out is this saving of time by the addition of an extra spurt on the throttle.

A man who keeps up a steady pace within the law usually gets there sooner than the speeder who wears out tires and car and passengers in a mad dash which, if it does not land him in court, often lands him in the ditch.

Again let us suppose that a man is making the legal speed of thirty-five miles an hour on the clear highway. Now there is a great difference to driver and passenger between thirty-five and forty-five miles an hour in the strain of the speed on the traveler. It is estimated that the strain of driving and riding at forty-five miles an hour is almost twice the strain of riding or driving at a pace of thirty-five.

Now the first individual, keeping within the law and not tiring himself or his passengers, travels over a distance of seventy miles in two hours' time. The second driver with a rate ten miles an hour faster, travels the seventy miles in one hour and thirty-five minutes. In other words with a strain of twice as much the man saves only twenty-five minutes or considerably less than a quarter of the time involved.

Remember that the strain on car and passengers doubles each time in a regular geometrical progression as the higher speeds are reached. The legal speed limit is as fast as it is safe to travel. It is steady driving that covers the ground, not the spurt that allows a fast mile followed by a slow one. The best drivers adopt a steady pace and stick to it.

Figure it out for yourself!

Highways and National Parks

By C. C. COTTRELL

Manager Good Roads Bureau, California State Automobile Association

TO one visiting our National Parks and Monuments, there are two features which stand out prominently—scenery and highways, or it would be better expressed to say that the one stands out prominently by its abundance and magnificence and that the other is called to the attention by its lack of everything that it should be, even to its very existence.

It is obvious that the fullest enjoyment of our National Parks and their wonderful attractions is dependent on highways, and that highways in turn augment or tend to destroy the use for which these areas were set aside.

A kind Providence gave us this scenery and it has been set apart by the Congress of the United States for the use, observation, health and pleasure of all the people of this country for all time. It is altogether fitting and proper that this should be done, but it is not fit and neither is it proper that the Federal Government should end its actions there.

Available to Public

What is more important is that the parks should be adequately cared for and administered, and above everything else made available to the people of this country. That can only be done by the providing of the necessary transportation facilities, chief among which, of course, are highways.

There are nineteen of these National Parks and twenty-four monuments located from Maine to the Hawaiian Islands and from Arkansas to Alaska. These great scenic treasures were visited by one and a quarter million people during the year just closing, which is a quadruple increase in attendance in seven short years.

This phenomenal travel has been caused by many things, chief among which may be mentioned the fact that all during the war period, and for a considerable time afterward, European ports were closed to pleasure travel; the enlightenment of our own people resulting from an intensive advertising campaign carried on by the Government and others; and a greater and freer use of motor vehicles.

These visitors will inspire others and the desire will be more and more to visit the parks. Particularly is this true because day by day the radius of travel of the average American family is growing greater and none will be satisfied until they have visited all of these places at least once.

Then, too, there is rapidly coming

the realization that the greatest scenery in the world is in our own National Parks. Before the war other countries had vied for this travel for it was highly profitable to them, and even now they are carrying on advertising campaigns, establishing travel bureaus and what not to induce our people to visit their attractions. The return of the spenders of hundreds of millions of dollars is eagerly sought.

While lack of enlightenment may have been the chief reason in the past for our people going elsewhere, the lack of adequate roadways has been another contributing cause.

The parks have not received a proper recognition by Congress in the matter of highway legislation and appropriations; in fact, they have been woefully neglected. The condition is acute today and if Congress does not soon make the necessary provisions for improved roads, there could be no surer or greater means of discouraging our people to visit our national recreational resorts.

The Federal Government does not even deserve the credit for most of the roads, good or bad, that today are found in our parks. Many of these were built and paid for by local communities long before the Government created the parks and some are old toll roads. A striking example of this is in Yosemite. There the Federal authorities exercise jurisdiction over 138 miles of road inside the park and 13 miles outside. Of this 151 miles the Government constructed just 8 miles.

There could be no criticism of that if the eight miles were all the additional roads that were needed but that is far from the requirement, and what is true of Yosemite is likewise the case in our other parks.

Take Mt. Rainier National Park in the state of Washington, for instance. That park contains 256 square miles of area and yet has but 18 miles of highway. It has been reliably estimated that a person staying there three days can get over no more than 5 per cent of it.

A condition is rapidly coming about where states and local communities are having highly improved highways constructed up to the very entrances of the parks, there to be met by either no roads at all or ones which are antiquated in their construction and in a very poor condition.

Three new approach roads have been built up to the boundaries of Mt. Rainier Park and there are no connect-

ing roads inside. Altogether the state of Washington and its communities have spent upwards of \$7,000,000 on that portion of these highways which are of no use except for park travel.

Truly that shows a wonderful spirit on the part of Washington people, especially when compared to the 18 miles of Federal road—unpaved and dusty and inadequately maintained.

The report of the Director of the National Park Service for 1921 includes the statement, "We have not a single paved road in the National Park System at this time." There are, however, about five miles of oiled macadam in Yellowstone and a short section of pavement in Grand Canyon Park which was built by a railroad company without Federal assistance.

This indictment of highway conditions within our parks and monuments should not be directed against our National Park officials but rather toward the Congress of the United States, which by its ignorance of conditions, lack of foresight and policies of false economy is paving the way for our people either to stay at home or go abroad.

There is no more capable or enthusiastic set of officials in our government service than those connected with our National Parks, but without appropriations they are handicapped. The wonder of it all is that they have accomplished so much with so little.

And then there is the matter of entrance fees. A toll is collected from every motor car entering our parks. The amount of this entrance fee is based somewhat on the number of miles of road within the park that is maintained by the Government. It varies. For Yosemite it is \$5 per car, and there is no charge for the Rocky Mountain Park, for the Government has no roads there.

Of course, the basic idea of this toll or entrance fee is that it should assist in maintaining the roads. Is it used for that purpose? It is not, and witness this: That money goes into the United States Treasury the same as other revenues and is used for assistance in maintaining the Federal Government.

Road Maintenance

The visitor to our parks is not going to feel half so bad about paying this if he knows that it is going to assist in maintaining the park roads. If it is necessary to collect this fee, it should be applied directly to road improvement.

If it isn't to assist in highway improvement, why single out the motor cars? Why not levy a head tax? That would be the equitable thing to do. And then we can go out before all the world and say that our Government has set apart the scenery that God gave us, taken possession of the roads they found there and charged an admission that our National Treasury might derive a little more revenue.

It is wrong and unjust and violates all the spirit that attended the purposes for which these areas were set apart.

What we must have in our National Parks are roads, and adequate ones at that. We cannot get them too soon. And there should be ample provision for maintenance. Let the fees be charged for a short time if applied to this endeavor, for the aggregate of them will aid in getting what is so vitally needed.

A comprehensive program of highway development has been worked out by the National Park Service. These officials who are closely in touch with the situation say that they should have a minimum of \$7,500,000 for a three-year program.

That amount does not appear large when one thinks of the great needs and the many areas to which it is to be applied. But if that amount were available, it would give a wonderful start and materially assist in pulling the parks out of a rut.

This plan was presented to the last Congress and was looked upon with great favor by those conversant with National Park needs.

The first thing to be done with a matter of this kind when presenting it to Congress is to get the approval of the Director of the Budget, and that procedure was followed at the last Congress.

After he had made a thorough investigation of the matter, General Dawes readily approved the idea and the appropriation. At that point everything looked fine.

But a new Director of the Budget took office, and before his sanction could be secured Congress adjourned and nothing was done.

Congress has now reconvened and it is the hope of every one that it will immediately give this matter its favorable consideration.

And to the end of impressing upon Congress the necessity of doing this it is up to everybody loving the great outdoors and to everyone having our National Parks at heart to get busy.

The Federal Government has an obligation here, and how well it will meet it will be a matter of history when this Congress adjourns.

Atlantic City to Build Speedway

Plans Laid for Concrete Stands to Accommodate 150,000 Spectators

THE East is laying plans for a new speedway. The popularity of the speedway on the Pacific Coast has aroused the interest of a group of eastern automobile men to the possibilities of this field of the motor car and in consequence four hundred acres have been purchased in Atlantic City for the site of the great bowl.

Plans have already been drawn by the Osborne Engineering Company of Cleveland, builders of the American League baseball grounds and the Polo Grounds in New York, for a one-and-a-half mile banked board track, as well as mammoth concrete stands, capable of accommodating 150,000 persons.

John S. Prince, one of the incorporators of the association, has become internationally famous as a builder of automobile speedways, having constructed the new track at Kansas City and tracks at Fresno, San Carlos, Cotati and Los Angeles. Prince is vice-president of the newly incorporated association and is enthusiastic over its success.

The association has the endorsement and coöperation of men prominently identified with the automobile industry in this country. They include Fred F.

Duesenberg, of the Duesenberg Automobile and Motors Company, Indianapolis; J. G. Vincent, vice-president of the Packard Motor Car Company; Harry C. Stutz, president of the H. C. Stutz Motor Car Company; Fred Moskovics, vice-president of the Marmon Company; Barney Oldfield, president of the Oldfield Tire Company; E. D. Rickenbacker, of the Rickenbacker Motor Company; and Geo. B. Gerau, president of the National Shuttle Valve Motor Company.

The plans of the association call for a track constructed entirely of wood, since it has been determined that better traction with less friction is obtained with this type, thereby permitting much greater speeds.

There is a growing interest in motor speedway racing in this country, particularly in the West. Philadelphia held two successive races in Fairmount Park several years ago. Interest there was tremendous, so much so that half a million persons crowded so dangerously near the roads that the authorities were compelled to discontinue the sport when it was found that no suitable track was available in the vicinity.

Besides motor races the association, it is learned, proposes providing facili-

ties for events like the Olympic games and the Army and Navy football games, attractions which Atlantic City has been striving to secure for many years. An inner track of a quarter mile will be provided for relay racing and motorcycle sprinting. Here also will be laid out a baseball diamond. The field will also provide facilities for horse shows, polo and the like. The association proposes to hold three major motor racing events annually—on Decoration Day, Fourth of July and Labor Day.

The racing game has developed automobile engineering to its present status. It has served to test out steels; it has solved problems in tire making; and along with its utilitarian value it has caught the fancy of the public.

Denied the jockeys and the thoroughbreds, California has bestowed a great deal of favor on motor car racing, and now it is looked on as the leading racing center of the United States. With the construction of the new plant at Atlantic City the East is again stepping forward to keep pace with the West, and the new track will probably revive interest in the "knights of the roaring road" on the Atlantic seaboard.

The Mother Lode Highway

Steps Taken to Improve Road Through Famous District of '49

STEPS are being taken to put the Mother Lode Highway into shape for motor touring.

What is the Mother Lode Highway?

It is the road that extends from the district of the southern mines to the country of the northern mines. It cuts through the heart of the land made famous by the Argonauts and recorded in the tales of Mark Twain and Bret Harte.

It is to make a trip through the region of the picturesque, to travel over the storied ways of the Mother Lode district.

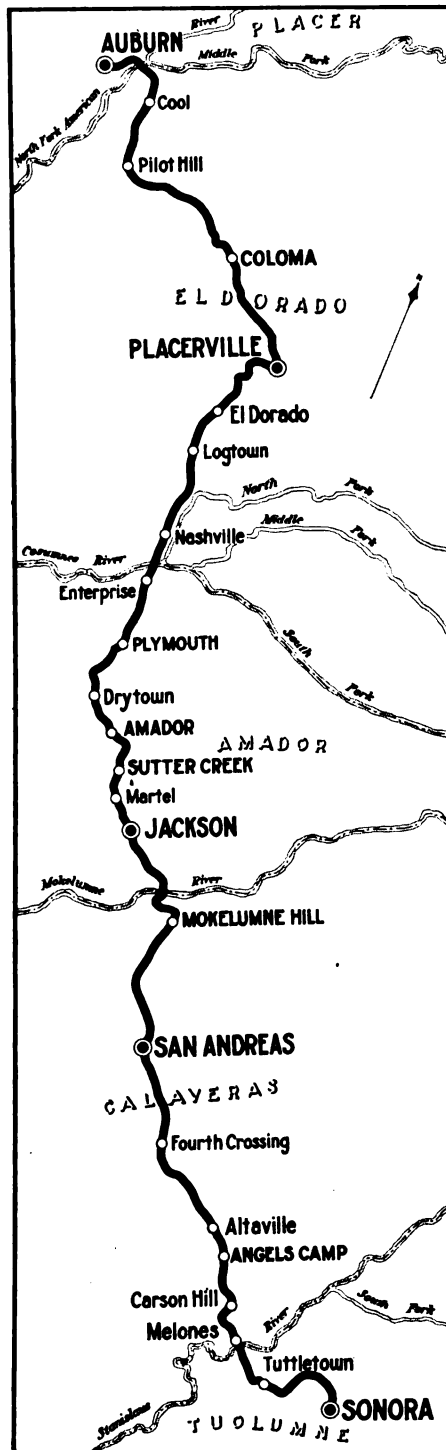
There is romance in the name, and romance in every mile of the road itself, for it will at last open to motor tourists the entire length of the most famous and interesting section of the state. This north-and-south highway will follow the path the early adventurers traveled along the golden Mother Lode, through a territory rich in historic associations and scenic beauty—a territory known the world over, but little visited because it has been so difficult to reach.

Auburn to Sonora

In 1921 the state legislature passed a measure creating a state highway between Auburn on the north and Sonora on the south, a road linking together the principal towns of the five Mother Lode counties. The survey has been made, the route of the highway determined, but the money for the work has not yet been appropriated. The Mother Lode State Highway Association, recently formed of the residents of the five counties, will petition the next legislature to provide these funds so that the construction work may go ahead. In the meantime, it is the purpose of the association to tell the people of the state something about this project, what it means economically to the state and recreationally to the motorist, and thus create a public sentiment for this newest of state highways.

Hold up your hand with the fingers spread. Now consider the palm to be the central part of the Great Valley of California, with a north-and-south highway system extending across the palm at the base of the fingers, and each finger a road climbing into the foothills of the Sierra Nevada. At the tip of each finger imagine these towns: Auburn, Placer County; Placerville, El Dorado County; Jackson, Amador County; San Andreas, Calaveras County; Sonora, Tuolumne County; and

you will have a rough picture of the present relation of this chain of historic towns of the Mother Lode coun-



Map of the Mother Lode Highway, one of the Historic Roads of California

try to the state's valley highway system. Each is connected with the valley by a separate road, but how inadequately are they connected with each other!

Is it any wonder that all of the famous old gold region, the most romantic strip of territory in the state, is so little visited, so little really understood and appreciated? The historic camps of the Forty-niners are too hard to get to! Motorists are content to visit less interesting regions where there are good highways. At present the ancient stage road of the '50's connects most of the towns of the Mother Lode, but it is a mountain road, rim-deep in dust in summer and impassable in parts in winter. The new survey makes use of some of this famous old road's right of way, but the completed highway will be more direct, modern in construction, and usable the year round.

A Picture of the Road

To get a picture of this highway-to-be, imagine a string stretched from the tip of your thumb to the tip of each finger and you will have a graphic idea of the Mother Lode State Highway, practically paralleling the valley highway, passing through the five counties that were, beginning in 1849, the cradle of the present state of California. Over it the motorist can leave the cross-continent Victory Highway at Auburn, or the Lincoln Highway at Placerville, and drive south at an easy grade for more than one hundred miles through the heart of the most famous mining region the world has ever known, to Sonora, with short side trips to such famous places as the Calaveras Big Tree Grove, the Kit Carson Pass, the Mammoth Cave of Calaveras, numerous Sierra resorts, scores of mountain lakes, and other beautiful and historic points of interest.

This romantic land of placer mining has given way to quartz mining; where the early adventurers bent over their gold pans and washed the surface gravel, the modern miners go far below the surface, their shafts and tunnels yielding millions of dollars of gold annually. But the Bret Harte country has lost none of its attraction for the visitor because of these modern touches; today throughout the length of the Mother Lode are hundreds of relics of the days of old; many of the little towns, with their rambling single streets and their ancient dwellings, look just as they did in the '50's, when they were filled with eager red-shirted miners from all parts of the world.

What a wealth of associations the old names bring up! Such names as Coloma, Hangtown, Smith Flat, El Dorado, Grizzly Flat, Fair Play,

Indian Diggings, Uno, Puckerville, Drytown, Volcano, Amador City, Sutter Creek, Jackson, Rich Gulch, Mokelumne Hill, San Andreas, Esmeralda, Douglas Flat, Angel's Camp, Jupiter, Columbia, Confidence, Tuttletown, Jimtown, Robinson's Ferry, Jackass Hill, Chinese Camp, Carson Hill, Whiskey Hill, Fiddletown, Poverty Flat, Tuolumne—do any of these names have a familiar sound? Of course. Some of them have grown, since their first loss of population following the early gold rush, into thriving towns. Some have changed names. Others have remained practically as they were in their hectic days—"ghost cities" wherein the visitor may easily recreate in imagination the old wild scenes described in the California stories of Bret Harte and Mark Twain. No region of the entire West holds for the tourist such a storehouse of romance as this chain of towns and hamlets dotted along the Mother Lode.

A Real Reason

So there is a real reason back of the desire of these five Sierra foothill counties for a permanent state highway. A region so rich in historic interest and scenic beauty deserves to be made easily accessible, enabling the world to come and see the original scenes and settings of Bret Harte's stories, to view the Mark Twain cabin at Jackass Hill, the spot where Marshall discovered the first California gold, the old fandango halls and saloons, the abandoned sluice boxes, the ancient flumes, the prospect holes and empty cabins of that bygone era. These, and scores of other fascinating relics of a richly romantic period, will be made easily accessible by the Mother Lode State Highway.

But another feature that will make this highway a valuable addition to the state's system of roads, and a welcome one to car owners, is this: It will provide another and distinctive all-year route between Lake Tahoe and Yosemite Valley, a route that will become nationally known because of the unique country it traverses and the many miles it saves over the present valley route. Because of its foothill altitude, below the heavy snows of the higher Sierras, it will be open for travel every month of the year—which the Tioga Road is not.

In addition to their storehouse of romance and beauty, the five Mother Lode counties have other storehouses that will be opened by this new artery. Fruit raising and agriculture, already a big asset to the region, will be developed to a scale that will enrich the entire state. Quick, direct transportation is what this country of the pioneers needs, and the Mother Lode State Highway will provide it. Let us repeat

that the state of California has passed the measure creating the highway; that the state engineers have completed the survey. The five counties concerned have been empowered by the state to maintain the highway within their respective boundaries. The construction now awaits the appropriation of money by the legislature, and it is to secure this appropriation that the Mother Lode State Highway Association is now working.

The name of Bret Harte carries with it the flavor of romance. It recalls the picturesque mining camps of the early history of California, the perilous trips in the mountain stage, the camaraderie of the great out-of-doors, the notorious deeds of Black Bart, the era of lynch law and vigilance committees, "the days of old, the days of gold, the days of '49."

There appear, too, other shadows of that romantic period—Horace Greeley and his memorable journey with Hank Monk to Placerville, Mark Twain and his "Jumping Frog of Calaveras County," James Marshall and the discovery that turned the eyes of the world westward and sent a countless multitude of treasure seekers to the land of promise.

It is like turning back the pages of history and living over again those stirring times to visit these shrines of early California, to travel the very paths over which the gold hunters toiled, and feel the inspiration of those scenic hills and canyons of the American River and the Mokelumne, which seem strangely hallowed in their garb of green and gold, aloof from the world, a wonderland of beauty and romance.

There is no more attractive trip in the log of the motorist than that sixty miles which lie between Placerville and Sonora.

Horace Greeley's Visit

In the days of Bret Harte Placerville was known as "Hangtown." The Cary House, where Horace Greeley lodged in 1859 and from the veranda of which he addressed a crowd of miners, is now known as the Hotel Placerville. It has lost its dingy coloring, but the balcony is still there and across the street is the stump of a tree from which six men were hanged on a summer's afternoon.

There still clings to Placerville a glamor of the olden times. Its narrow main street banked by long lines of stores and residences, its crooked alleyways and the blacksmith shop that dates back to the days of the gold seekers, all set well into the picture.

From there the road winds out to the quaint little town of Coloma, where James Marshall's discovery of gold on January 19, 1848, made California the goal of the world's adventurers. You find yourself within that picturesque

canyon of the south fork of the American River. There are the old iron-shuttered houses that sheltered the pioneers, there on the bend of the river is the very spot where the first nugget of gold was picked up.

In the days of Bret Harte Coloma had a population of probably 10,000 and its "business district" was made up of saloons, dance halls and faro banks. Here it was that a number of gamblers and other persons of ill repute were driven out and this incident furnished the inspiration for the "Outcasts of Poker Flat."

Relics of Early Days

Returning by way of Placerville you may drive to Plymouth, Amador, Sutter Creek and Jackson, all still guarding their relics of the early days with many an iron-shuttered shack that must have afforded excellent protection for the inmates when the atmosphere was too full of bullets for comfort.

Just before reaching the town of Mokelumne Hill you cross the Mokelumne River, one of the most beautiful of the streams that flow through the deep canyons of that wild mountain country. It is a wonderful picture in color, the tints of gold and green and brown on the mountain side and the water rippling over the great boulders below. It hardly seems real, so gorgeous are the tints as the sun is slowly sinking at the end of the canyon.

San Andreas, the next town, was the scene of Mark Twain's funny yarn, "The Jumping Frog of Calaveras County," and it is in the bar room of the Metropolitan Hotel, which is still standing, that the incident which inspired the story took place.

That California owes the Mother Lode counties a highway and that if the Mother Lode Highway Association continues in its fight for recognition of the road it will win an appropriation, was the declaration made by Clarence Jarvis, member of the State Board of Control, at a meeting of 200 residents of Placer, El Dorado, Amador, Calaveras and Tuolumne counties in behalf of the project at Sonora.

Announcement was also made at the meeting that estimates of cost of the construction of the highway soon will be completed by State Highway Commission engineers.

Jarvis said that the gold produced in these five counties amounted to more than \$766,000,000. He declared scientists have proven that still more than \$2,000,000,000 in wealth is to be extracted from the gold mines in the five Mother Lode counties.

Messages were received from Governor William D. Stephens and Governor-elect Friend W. Richardson pledging their support to the highway.



A C A D I L L A C

Announcement

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How Is Your Car Built?

It Pays to Know the Construction of Your Car

WHEN your car develops trouble, get out your instruction book and spend a moment refreshing your memory regarding the construction of the parts under suspicion. In most cases you can put your finger on the cause almost immediately. A few very wide-awake repairmen follow this procedure, and the rest would if they knew its advantages. Most automobile disorders can be cured in a moment, once they are found, but the motorist who is not familiar with the most intimate details of his car construction often works in the dark, even though he may be thoroughly grounded in the principles upon which an automobile operates. The instruction book is recommended because there is no need for carrying these details around in your head; just refer to the instruction book for information when something goes wrong.

What would you do if your engine strangled and died without warning, as though some imp under the hood had shut off the gasoline supply? Suppose you had bought ten gallons of gasoline only a few minutes before. Suppose that you tickled the carburetor and fuel flowed out in an ample stream. Then you opened the drain cock below the carburetor bowl and found it to be clogged with dirt. After running a wire up through the opening to dislodge the sediment a copious flow of fuel through the cock was obtained. You examined the throttle and noted that it was opening properly and you looked at the choke and saw that it also was in working order. What would you do next? Would you take the carburetor apart and clean the jets?

The Instruction Book

At this point the owner of a car in like case called in the aid of his instruction book. He studied a sectional view of his carburetor and presently discovered that the auxiliary air valve was controlled by a dashpot filled with gasoline. A dashpot is just a small piston working in a small cylinder which is filled with some liquid, gasoline in this case. Its purpose, in this case, was to slow down the movement of the air valve. Thus when the throttle is opened abruptly, the air valve does not immediately fly open, but moves with sufficient deliberation so that a rich mixture and quick acceleration are obtained during the time that the throttle is being opened. The opening of the air valve is limited to the rate at which gasoline leaks past the piston. All this the owner took in in a moment.

Then he realized that dirt in the gasoline might cause the dashpot piston to stick and hold the air valve open. As long as it was open the engine could not be started; that was plain because there would not be sufficient suction even though the choke was pulled out all the way. The air valve was concealed by a hot-air pipe. When he removed the latter, sure enough, there was his trouble. The air valve was stuck open. He pulled it closed, hoping thereby to dislodge the dirt. Then he stepped on the starter and the engine took hold immediately. No further trouble was experienced, but as insurance against further difficulties due to dirt he installed a gasoline filter.

A Similar Case

A somewhat similar case is reported by a motorist with a totally different make of carburetor. One day the car developed a miss at speeds below twenty-five miles per hour on high. Gradually it grew worse until the engine would not run at all below twenty miles per hour. Examination showed that the carburetor was being amply supplied with fuel, and in fact it was hardly necessary to question this possibility because the engine ran so well at higher speeds. Whenever the engine was switched off, it had to be primed and the carburetor flooded before it could be started again. Finally it occurred to the owner to look at the instruction book. He discovered that the carburetor had three jets which came into action progressively as the throttle was opened, only one jet being used at speeds below twenty or twenty-five miles per hour. Without delay he removed that jet and found it to be stopped with some lint. On replacing it he had no further trouble.

A motorist changed his engine oil one day, but after filling with new oil the oil gauge failed to register. A glance at the instruction book told him that the pump was very likely to need priming after the oil had been drained. He removed the plug in the top of the pump, poured in a little oil, replaced the plug, started the engine and was gratified to note that the pressure was okeh.

A Special Boon

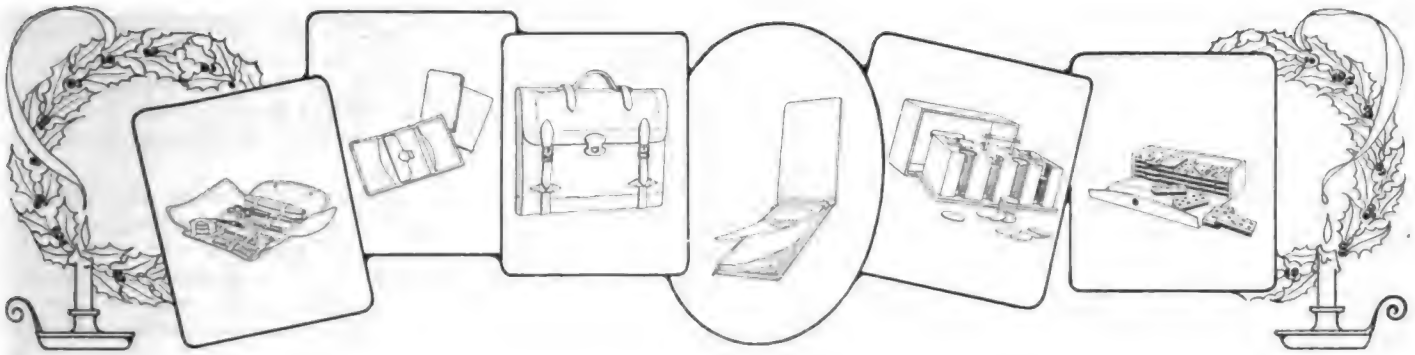
An instruction book is a special boon in locating all kinds of electrical trouble. An examination of the wiring diagram will frequently give a clue as to where the trouble is, even though you may not be an electrical expert. In-

cidentally you may be interested to know that nearly every really up-to-date repairman has a book of wiring diagrams to which he is constantly referring.

The internal construction of your car can be learned from the instruction book, while the externals may be learned by studying them casually whenever you are working around the car. As a good illustration, take the case of the motorist who noted a slight but rather musical knock issuing from under the hood. It disappeared when the engine was switched off, which proved that it was caused by the engine. From its sound, it was difficult to say whether the noise was inside the engine or outside. But then the owner recalled that the fan-belt joint was made of metal. It was barely possible, he thought, that the trouble was here, although the belt was running the fan and apparently was in excellent condition. He stopped the engine, looked at the belt carefully and found that one of the fastening members at the joint had broken. Removal of the belt eliminated the knock, and a new belt was applied at the next town. It was important in this instance to locate the knock, because, until found, it suggested that something serious was wrong inside the engine. It wasn't a powerful knock, but the sound was enough out of the ordinary to suggest trouble.

The Missing Lung

A motorist who owned a car with badly worn valve guides and stems had the guides reamed out and valves with oversize stems fitted; this procedure was necessary because the guides were cast integrally with the cylinders. After driving the car for a day or so, one cylinder quit entirely. The missing was accompanied by a tapping sound as produced by a loose valve adjustment, some knocking and a feeling of lame running that clearly suggested compression was bad in one cylinder. He reasoned, as he listened, that in reaming the guides the repairman had left one hole a little too tight and that a valve was sticking. Then he lifted the hood and looked the valves over and discovered that one exhaust valve was open half an inch. He pulled the valve closed and then squirted cylinder oil over its stem, hoping this simple remedy would be sufficient and that it would not be necessary to remove the head and increase the size of the guide hole. Fortunately the remedy proved sufficient, although in some



Practical Gifts for Christmas

Those who find it difficult to select practical Christmas gifts will reach an easy solution of the problem here. Hundreds of inexpensive and useful gifts will make it easy for you to choose an acceptable and appropriate present.

Here are a few suggestions:

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 Silk grain cowhide wallet **\$3**
 Brown sealskin, hip-pocket size **\$7**

BRIEF CASES: Used by professional men, salesmen, and others in nearly every business. A very useful gift. Hand bordered cowhide, lined with cowhide, extra heavy straps, extension lock, adjustable handle **\$21**
 Genuine pigskin, cowhide lining, extension lock **\$22.75**
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LEATHER COVERED FLASKS: Some men will appreciate this gift very highly. A convenient size, full half-pint, covered with steer hide, nickel top **\$3**

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Four-piece set, best steel, calfskin case (for gentlemen) **\$5.75**

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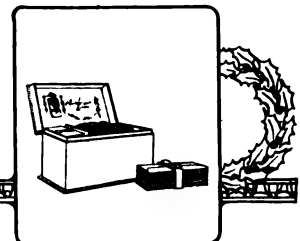
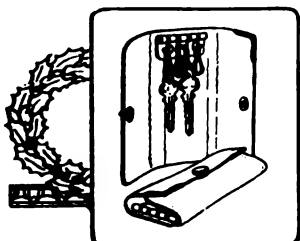
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cases it might be necessary to take the head off to cure the trouble.

Another motor car owner left his car one day to have the valves ground. On his way home the next evening he stopped to get the machine. He found the head mechanic and one helper trying to discover why the engine would only run on four of its six cylinders. He waited ten or fifteen minutes and then started to do a little looking on his own account, just to pass the time. He immediately discovered that the wires on cylinders five and six had been transposed when the spark plugs were cleaned. As soon as this change was made the engine ran perfectly. He discovered the trouble so quickly because he had marked the wires against just such a contingency.

A Slow Chattering

An experienced motorist at the wheel of a certain new car noted a peculiar

slow chattering sound whenever the car hit a bump with sufficient force to twist the frame. Previous to starting, while oiling the engine, he had noticed, while glancing over the engine details, that its front end was supported in a ball joint which was provided with an oil cup. He reasoned that it was quite possible that the ball joint required oiling and that the chatter was produced by the lack of lubricant. He squirted some oil into the cup and the noise immediately stopped.

Another watchful driver noticed that the low-tension wire which connected the coil with the distributor was gradually chafing through at the point where it touched the corner of the cylinder block. However, before he had an opportunity to tape the wire his engine refused to go. Without looking any further he ran his finger along the wire and discovered a bare spot where the insulation had completely worn

through at the point where it chafed against the cylinder block. Having no tire tape at hand he wrapped some paper around the wire, tied it securely and then started the engine without difficulty.

A certain motor car owner found that when his car was full the brakes worked better than when the car was empty. As the load increased, the brakes tightened. Therefore, when his brakes finally did require adjusting he very wisely put four people into the car while doing the job. He reasoned that if he adjusted them with the car empty he was likely to get them too tight, while if he made an allowance he was likely to have them too loose. Best results were to be obtained by doing the work with the car loaded. This method is only advisable if much difference is noted in the brake adjustment with the car empty or full.

The Background of Romance

(Continued from page 15)

Tulare Valley. When they reached the top of the range they discovered they were on the wrong road. But they believed that if they went due west they must soon pass the sandy plain and encounter the fertile fields of the Tulare Valley.

Death Valley lies one hundred and ten feet below the sea level, and the first oasis is fifty miles from the foot of the mountains. The party soon became pressed for food and the oxen used to transport the baggage were eaten. Finally, Manly with one companion went on ahead to seek assistance.

Twenty-six days later they returned to the camp on the desert with food and mules to rescue the remainder of the party. But many of those who had been left behind had deserted in small groups to save themselves, and perished in the attempt. Only four of the party were alive when the rescuers returned.

The Manly expedition over the desert consumed four months, and the entire journey across the plains into California from Wisconsin had required an entire year. Manly died in 1901.

The Donner Tragedy

The tragic story of the Donner expedition into the northern Sierras and the misery endured by the party housed in tiny cabins in the vicinity of Donner Lake is generally known, and the expeditions of John C. Frémont, the "Pathfinder," and his chief of scouts, Kit Carson, have been made the theme of many an article in magazine and newspaper.

It was in the time of Frémont that the Bear Flag Revolution was brought about and California was proclaimed a republic. Sonoma has preserved the very barracks in which the Bear flag was made, and General Vallejo's headquarters are still standing, as well as the gambling house which Joaquin Murrietta, the bandit, frequented in the days of his fame.

Over the old customs house at Monterey the American flag was raised by Commodore Sloat on July 7, 1846. Captain Montgomery of the *Portsmouth* raised the Stars and Stripes at San Francisco, then known as Yerba Buena, two days later, and on the fifteenth of the month Commodore Stockton arrived from Honolulu and took command of the American land forces at Monterey. Frémont joined him soon after. On August 17 Stockton issued a proclamation at Los Angeles declaring the Mexican control of California at an end.

Discovery of Gold

Perhaps the most remarkable of the events in the romantic background of California was the discovery of gold by Marshall in 1848. It was this that started the rush of immigrants toward the Golden State and converted the Pacific Coast into a veritable Colchis with thousands of Argonauts arriving daily in quest of the golden fleece.

These days of Eldorado are picturesque. They represent the period of California history which is best known to the world. They made California "golden" and they furnished the bulk

of material for the popular tales of Bret Harte and the earlier work of Mark Twain.

The wealth of the miners sent prices of all commodities skyward and the bill of fare of the old Placerville hotel read like this:

Beef with one potato, fair size	\$1.25
Baked Beans, greased.....	1.00
Hash, low grade.....	.75
Hash, 18-karat.....	1.00
Roast Grizzly.....	1.00
Jackass Rabbit, whole.....	1.50
A Square Meal.....	3.00

All the above payable in advance.
Gold scales on the end of the bar.

Eggs were sold as high as three dollars each and sugar at four dollars a pound.

Bayard Taylor records some interesting information about the days of the Argonauts. "A citizen of San Francisco," he writes, "died insolvent to the amount of \$41,000. His administrators were delayed in settling his affairs and his real estate advanced so rapidly in value meantime that after his debts had been paid his heirs had a yearly income of \$40,000."

"Pandemonium on a frolic" was the way one immigrant described the life in the days of '49.

The Trail of '49

If you would recall the days of '49 the motor car offers a key to the situation, for the Mother Lode Highway has opened the way for the motor car over the scenes of the early days. From Sonora and Jimtown to Grass Valley and Nevada City the route is filled with interesting relics of the early

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Systems and Force Feed Lubricators.

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days. It is not difficult to re-people these old narrow streets of the early towns with their colorful pageantry. Hundreds of the buildings of '49 are still standing, including the hotel at San Andreas and the very room in which Mark Twain set the scene for his "Jumping Frog of Calaveras County."

Two years of gold digging resulted in such an increase to the population of the California territory that it was decided to organize a state government. The convention was held on September 3, 1849, at Monterey in the old capitol building, which has been preserved. Colton Hall marks the birthplace of California as one of the United States. Later the capital was transferred to Sacramento.

About Monterey there is a great deal of interest to the motorist which relates to the early history of California. Then, too, as the home of Robert Louis Stevenson, it has a literary interest. The little town still preserves the atmosphere of the early days and probably more than any other of the cities of California clings to its background of romance.

Modoc Indian War

Way up in the northeast corner of California, up where it rubs noses with Nevada and Oregon and looks down on the rest of the world lies the little county of Modoc, celebrated as the scene of the Lava Bed Indian war, and due to be celebrated the world over for its scenic attractions, which rival, if they do not surpass, any other marvel of like extent in the United States.

This county was made up of a slice from Siskiyou County and derives its name from the Modoc Indians, a tribe that formed an impregnable barrier for a long time against the inroads of the white settlers. Washoe County, Nevada, bounds Modoc on the east, and Siskiyou on the west. Lake and Klamath counties, Oregon, form the northern boundry, while Lassen County forms the southern line. Modoc is almost square, approximately sixty-two miles in length and seventy miles in width.

Through the county runs the Warner range of mountains. On the eastern slope lies Surprise Valley and on the western Goose Lake, the Hot Springs and Big Valley. The elevation of the county ranges from 4,000 feet in the valley lands to peaks as high as 8,000 feet, snow-covered throughout the year.

The Lava Beds

The lava beds, famous as the site of the Indian war, lie west of Goose Lake Valley. Here are gulches and ravines, some of which are a hundred feet in width, and there are scores of caves that run for miles beneath the rocks.

Here was the hiding place for the Indians, a region that resembles in its quaint array of cones and domes and towers the pinnacles of San Benito County.

The Modoc Indian war developed after the massacre of an immigrant train which had left Oregon for California in September of 1852. There were sixty-five persons in the train of men, women and children and all were put to death with the exception of two girls, aged 12 and 14 years, who were made squaws of the chief of the tribe. The other squaws became jealous of the two white girls and killed them. There was great excitement in Yreka on hearing of the fate of the immigrants. A band of miners set out, according to Hittell's account and, having persuaded the Indians to lay aside their bows and arrows and smoke the pipe of peace, they drew their pistols and succeeded in slaying all but six of the Indians. This was known as the Ben Wright massacre.

War of 1864

Then the war was on, and hostilities continued until 1864, when a treaty was entered into by the terms of which the Modocs were to move to the Klamath Indian reservation in Oregon. Soon after the Modocs revolted and the war was on again. Soldiers were sent out to round them up and a battle took place at Lost River. One Indian was killed and one soldier.

The Indians then took to the lava beds, where there was an abundance of hiding places and where a small band might defy an army. Shortly after the battle of Lost River a small band of Indians raided a camp on Rhett Lake and killed twelve men and a boy. At this time there were only fifty-one Indians in the lava bed-region, but the whole district was in peril from the continual raids.

When word of the Rhett Lake raid reached Klamath and Sacramento a troop of 400 men was sent to clear the Modoc region of Indians. The soldiers took their task too easily, and as they reached the Indian stronghold were met with a deadly fire. Their shots in return did no damage, as they could not locate the Indians who fired from rocks and caves, above and below, a deadly hail of arrows and bullets. Thirty-five soldiers were killed in the first assault.

Terms of Peace

It was decided at Washington to offer the Modocs terms of peace and transportation to some distant reservation. On April 11, 1873, Good Friday, a conference was arranged, but the Indians decided they would reverse the affair in which Wright had taken advantage of their fellows.

General Canby, commander of the troop of soldiers, was killed and a number of his followers. The soldiers now numbered a thousand, and the complete annihilation of the Modoc tribe was determined on.

In four days of fighting the Indians lost two men, the soldiers sixteen. But the two Indians were not killed by the soldiers. They died in trying to open a shell which had not exploded and which they, with their savage curiosity, endeavored to explore.

Meacham, one of the chroniclers of the expedition, values that particular shell on the pro rata expense of the entire Modoc war to the Government as \$500,000.

A few days later a reconnaissance party was sent out and thirteen soldiers were killed and sixteen wounded. The Indians were selling their lives dearly. Several score of Modocs had joined the little band in the lava beds and kept a continual fire directed at the camp of the whites.

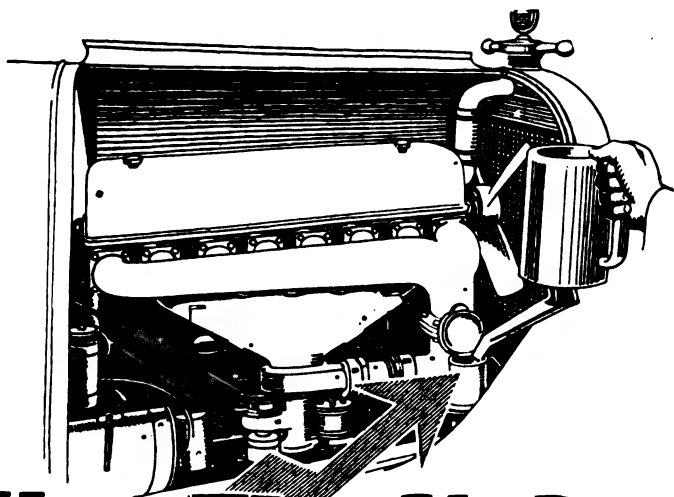
In April of 1873 Colonel Jefferson C. Davis was sent to command the soldiers and he determined on a continual battle to tire out the Indians. Seventy-five of the Indians were captured by a cavalry troop and soon afterward the entire band were made prisoners.

The war closed with the execution of the chiefs of the Modocs and the remainder of the band were sent to a reservation in Nebraska.

The records of the Indians in California, the story of the conflict between the pioneers and the aboriginals is replete with interest. In Lake County, alone a wealth of legend has been developed by the Indian tribes, legends that seek to explain the origin of rock and hill and dale and stream and the early experiences of mankind.

Marin, too, has a volume of legend dealing with the Great Spirit of Tamalpais and the mighty convulsion of Nature which formed the Golden Gate. The county name itself shows the Indian influence for Marin was a chief of the Tamal tribe in the days of the Mission Fathers and was converted at the San Rafael mission soon after it was founded.

Travel over any of the highways of California, you will find that flavor of romance if you familiarize yourself with the story of the district in which you travel. It adds much to the interest of the trip to know what has taken place there long before the advent of the motor car, and you and I who tour about the highways of the state will find a greater pleasure in our touring as we become more and more familiar with this subtle something which for want of a better name we must call—the Background of Romance.



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What's The Hurry?

Why the Stress and Strain of a Furious Pace?

WHAT's your hurry? We live in an Age of Speed, it is true, but if we expect to live in it long we must set a cautious pace.

There is an irresistible urge that steals over many a motorist as he sits at the wheel of a powerful car to answer the call of Speed. We see it in the children's games and in the line of rapid transit that leads to roller coasters of terrifying pace. All of us seem anxious to cover as much ground as we can while youth is with us and joy in life.

But is there not a happy medium where we can eliminate the stress and strain while still enjoying the thrill of this delicious sense of speed?

An Innate Desire

Americans possess this peculiar innate desire for swift-moving more than any other nation on the earth. It is probably due to our type of government, our democratic customs, our social life itself. George Horace Lorimer declared once in speaking of education and quick thinking: "Anything that enables a boy to get the answer while the other fellow is biting his pencil pays."

We have converted this into a rule of life itself and the speed of the automobile is a veritable symbol of our civilization.

Yet to the man who thinks, to the philosopher, the nation obsessed with the desire of speed appears as a superficial people, a people influenced by the idea of results rather than method, where Pragmatism is the chief aim of life. "What have I accomplished?" is the manner in which a man sums his record, not "How have I done what I have done?"

Driver Sets the Pace

The automobile, like all conveniences, yes, necessities of life, offers to its owner a means of locomotion and the driver himself must arrange the pace. The automobile is not to be blamed for the driver for the automobile is perhaps the greatest modern influence in civilization.

Like children, we have seized on a new field of effort, we have madly developed it, seeing in it for the most part only a glorious gratification of our desires for thrill through speed. Is there not a deeper meaning in the motor car than this? Has the automobile not a nobler purpose for its existence?

Drive out on the highways of the

state and observe how the stream of traffic behaves. Watch the individual drivers. Note their expressions and try to fathom their thoughts. Does the average man when he takes out a motor car think of it in any sense more than as a means of travelling from one place to another at as rapid a pace as the law allows? Is this the attitude which we should take?

Looking Backward

If we could but turn the years backward and look over the world as it was at the time of the birth of the motor car we might appreciate the more the marvels of its modern construction, the comforts that have been added to its design, the wide field of usefulness which has been opened to it.

We might catch a glimpse of the slow-moving traffic of those days gone by and ponder a little on the remarkable change.

What benefits has the motor car really brought to you and to me? Would you class it, as to your personal needs, as a luxury or a necessity? The old advertising slogan of "Ask the Man Who Owns One" applies here. A man who has once driven or even ridden in a motor vehicle is ever afterwards a motorist. It is this irresistible element in the motor car that makes it so much a part and parcel of our civilization today.

The Horse and Buggy

In the days of the horse and buggy, you rarely saw the driver lashing his steed in a fury and racing down the turnpike as fast as the poor beast could go. Why? Because the horse was not a machine but an animal, and because the driver could not quite see the necessity of all the mad hurry.

How does this apply to our life today? Does it mean that we who drive motor cars should proceed at the pace of a horse and buggy and never advance the pace of our cars to a respectable speed? Certainly not. But it applies in this way: we must remember that we have other ends in life than sheer speed, we must remember that the motor car was not devised to take the place of the roller coaster, we must remember that the life of our steed is in direct relation to our treatment of it.

Speed, and by speed I mean a pace above the legal limit, has a peculiar effect on motorists. It has a physiologi-

cal reaction in that it develops a sensuous impulse for thrill and excitement of all types; it has a psychological reaction in that it stimulates the consciousness into egotism and develops selfishness and cruelty.

It is the fast driver who most often is the "road hog." He is usually the type that runs away after an accident. He is the Nemesis of the motor car, for on him must be placed the blame for foolish legislation and drastic legislation devised to throttle the individual at the expense of the entire industry.

A Great Temptation

The motorist of today has a great temptation to resist in refusing the lure of speed, for human nature is most susceptible to stimulants and speed is perhaps the most powerful urge we know.

All accidents are not due to speeding. In truth, many are due to too slow a pace, but the fact remains that the safest driver is the man who preserves a happy medium in his travels in a motor car, the man who is thoughtful of the comfort of his passengers and the condition of his car, the man who does not infringe on the rights of his fellow traveller and reveals a "motor courtesy" when he is out on the road.

The accident tolls of our city and country highways would be far, far lower if "motor courtesy" was exercised by those who drove over them.

Motor courtesy does not only include a moderate rate of speed. It includes care in driving, adequately adjusted headlights, proper signals and a host of other things. When all motorists are courteous, there will be far fewer accidents.

Disregard of Rights

Diagnose the motor car accidents of any city or state and what do you find? That mishaps are most often due to a disregard on the part of one or the other of the parties involved of the rights of other motorists on the road. How many times do you find a driver speeding past an intersection with complete disregard for any car that may be approaching from the right. "He has brakes; let him use them," is often this reckless pilot's defense. Sometime, however, two drivers of the same type may meet and then only will both be cured.

The sounding of the horn in passing



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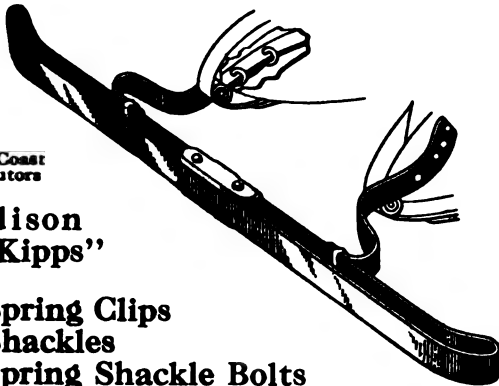
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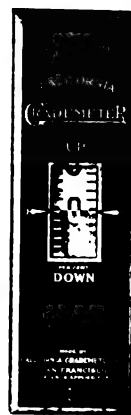


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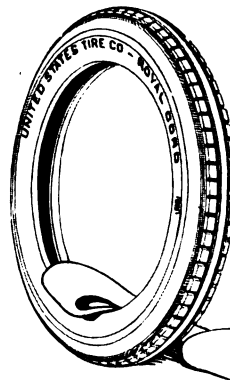
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another vehicle, in approaching an intersection and in rounding a turn on a mountain road is required by the law, yet how many motorists neglect this important item in safe driving and in motor courtesy. We can never get anywhere in making the highways safe for motoring until we do our own part in the campaign.

"Playing Fair"

If we drive about the streets of the city, threading through traffic, knowing that the brakes of the car we are driving are defective or poorly adjusted, we are failing to "play fair" with our fellow motorist and our fellow pedestrian. Carelessness too often in this age of speed leads to loss of life or serious accident.

Campaigns for safe motoring in any community are little more than the education of the public to the necessity of caution and courtesy, and perhaps the latter term would cover the whole field.

Safety devices help sometimes in the elimination of accident, but no mechanical element can be substituted for the common sense of the individual. "The greatest safety device in the world

is a cautious man," and if he is cautious he should go a step farther and be courteous as well.

There is a danger in the motor car that lies deeper than the evident conclusions from a perusal of the accident list and that is in the psychological effect. There is an aristocracy in motoring entirely foreign to the democracy of which we boast. If we cultivate this it will have an indirect effect on our entire social structure. It is a selfishness that forgets there are others on the road and that the pedestrian, perhaps, after all is said and done is a privileged individual when engaged in the great national pastime of walking.

Motor Aristocracy

Let us have no aristocracy of motoring. Let us cling to our democracy even though a chauffeur in livery pilots us through the web of traffic on our homeward journey.

Democracy on the road is road courtesy, no more, no less. It is the Golden Rule as applied to motoring and it goes a long way toward making life the more worth living.

But we bring no case against the machine; it is the driver of whom we

speak. As the greatest factor in the rapid spread of civilization, as the greatest convenience of modern times, the motor car stands supreme. What it will do and what it will be when the other remarkable inventions of this twentieth century are allied with it, we cannot foretell. But its future is golden and the limit of its possibilities is yet to be reached.

Better Schools

The motor car has given us better schools and better colleges. It has enabled the farmer to get more pleasure out of life. It has brought the farm to the city and the city to the farm. Nowadays a man may live in his country home and be at his desk in the city after a brief ride. And what a fund of good health has it brought to its owner!

Statistics tell us that from five to ten years have been added to the average length of life since 1896. This increase can certainly be checked up, in part at least, to the love of outdoor life the motor car has engendered and with motor camping growing more and more in popular favor, the end is not yet.

Gasoline Consumption Shows Increase

Figures Show 16 Per Cent Greater Sale Than in Corresponding Period of 1921

CONSUMPTION of gasoline in the United States in September amounted to 507,934,527 gallons, a decrease of 75,000,000 gallons, or 12.98 per cent, from the figures for August, in which month a high record mark for domestic consumption of gasoline was attained, according to the Bureau of Mines. Consumption of gasoline in September was, however, approximately 16 per cent greater than in September of last year.

Production of gasoline in September amounted to 536,491,988 gallons, which is a decrease of 2.45 per cent from the August output but an increase of 28.68 per cent over the figures for September, 1921. Exports of gasoline for the month were 44,833,609 gallons; imports were 4,563,315 gallons; and shipments to insular possessions amounted to 1,974,668 gallons. Stocks of gasoline on hand October 1 were 690,050,809 gallons, a decrease of 13,700,000 gallons during the month.

The number of operating refineries reporting to the Bureau of Mines in September was 309 as compared with 295 operating in August. These plants operated at 88.52 per cent of their indicated capacity.

Production of kerosene in September amounted to 197,935,102 gallons, an increase of approximately 13,500,000 gallons, or 7.35 per cent, over the August output and about 44,000,000 gallons, or 28.51 per cent, above the figure for September, 1921. Stocks of kerosene October 1 were 270,576,864 gallons, a decrease of 15,000,000 gallons for the month. Kerosene exports and shipments to insular possessions in September amounted to 72,114,973 gallons.

The output of gas and fuel oils in September amounted to 917,857,786 gallons, which is 27,000,000 gallons, or 2.8 per cent, below the August production, but about 129,000,000 gallons above the figure for September of last

year. Exports of gas and fuel oils and shipments to insular possessions in September were 74,823,025 gallons. Bunker oil laden on vessels engaged in foreign trade amounted to 117,458,082 gallons. Stocks on hand October 1 were 1,364,957,165 gallons, a decrease of only 1,654,446 gallons during the month. Gas and fuel oil stocks were 135,000,000 gallons above the figure for September, 1921.

Production of lubricating oils in September amounted to 82,056,712 gallons, a decrease of 6,775,000 gallons, or 7.62 per cent, from the August output, but an increase of 18.83 per cent over the output for September, 1921. Exports and shipments to insular possessions during the month totaled 28,136,445 gallons. Stocks of lubricating oils October 1 were 214,727,811 gallons, a decrease of 6,000,000 gallons during the month and of 15,500,000 gallons compared with figures for September a year ago.



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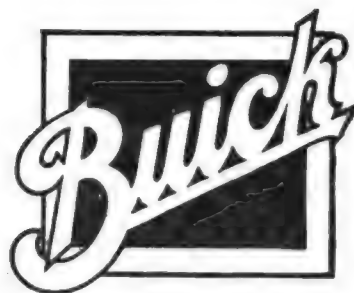
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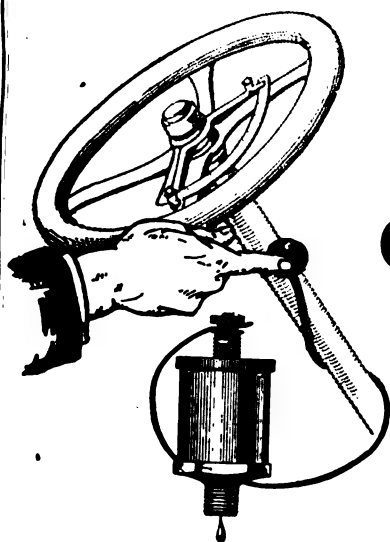
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Field of Forest Service Widens

Division of Department of Agriculture Now Maintains 10,984 Miles of Road

THE Forest Service has built and now maintains 10,984 miles of roads and trails.

During the past year the Forest Service, United States Department of Agriculture, constructed 724 miles of minor roads at a cost of \$540,868 and 2,959 miles of trails at a cost of \$519,429.

Three hundred and eight miles of major roads were constructed for the Forest Service by the Bureau of Public Roads at a cost of \$4,620,326. In addition 3,007 miles of major and minor projects were maintained at a cost of \$187,162, of which \$65,336 was secured from local authorities. Forty-two hundred and ninety-four miles of trails were maintained at a cost of \$113,683. This represents a total expenditure for the construction of roads and trails during the year 1921 of \$6,456,694, which includes \$2,153,522 cooperative funds secured from states and counties.

Expenditures to January 1, 1922,

for constructing 3,729 miles of major roads total \$15,301,373, of which \$5,681,451 are cooperative funds. Likewise 4,856 miles of minor roads were constructed by the Service at a cost of \$2,752,970, including \$773,922 of cooperative funds. To date \$1,917,169 has been expended in the construction and maintenance of 12,448 miles of trails. The total thus far expended upon equipment amounts to \$651,608, while \$920,134 was expended upon overhead and administration by the Bureau of Public Roads and Forest Service.

A total expenditure of \$22,216,724 for the construction of 4,786 miles of roads, 6,711 miles of trails and the maintenance of 3,007 miles of roads and 5,737 miles of trails has been made.

A New Mountain Park

One of the most attractive of the mountain park sites in California is soon to be opened to motorists.

Announcement has been made by State Forester M. B. Pratt of Sacramento that development and administration by the Board of Forestry of Burney Falls, Shasta County, and a virgin tract of yellow pine near by as a new state park are planned.

Tract of 160 Acres

The tract of land comprises only 160 acres, but with its falls and timber is described by Pratt and by members of the Board of Forestry as one of the most ideal mountain park sites in California. It was deeded to the state two years ago by Mr. and Mrs. Frank McArthur of San Francisco with the understanding that the timber and falls would be preserved as a memorial to McArthur's father and mother, John and Catherine McArthur.

Governor William D. Stephens asked the Board of Forestry to take over the administration of the park, and as a result, Pratt says, plans have been launched for its improvement.

Milady Motorist

(Continued from page 19)

ing to suit one's personality. In a recent article, she said:

"In selecting the proper clothes, it is well to remember that a knowledge of your type must breed independence in the selection of your wardrobe. Don't take, and don't ask, everyone's advice. Make up your mind what you want and don't let anyone make you buy something else. I personally would never permit anyone else to select my clothes for me. My sole rule is that my dress *must* become me. I have never changed my type. I am sure that I could don a dress made for me years ago and find it becoming. No matter where the arm of Fashion has pointed, I have never altered my style of dressing. My waistline has stayed where it was born, no matter how far up or down the line of demarcation has moved."

The American woman wears sport clothes better than does any other type of woman. In fact, it has been repeatedly said (much to the disgust of representatives of other countries) that American women always wear their clothes better, no matter what kind. But, as Irene Castle also remarked, "The American woman never looks so well as when she reveals her figure in sharply defined clear-cut silhouette—that outlines itself with quick bold strokes." And, without doubt, that is what the new sport clothes do.

In recent years, the craze for sport clothes has led to inappropriate dressing; it has not been unusual to see tailored rough-and-readies being worn to tea, to the *matinée*, and even men have taken them up enthusiastically for business wear. But it has gradually grown upon the fashionable minds that every type of costume has its place, and it is rarely that one sees a feathery hat with an outdoor suit, or earrings worn with knickers.

Milady Motorist will have no difficulty in selecting stunning clothes for this season, for the new sport clothes are beautifully tailored of the best-looking materials, and the lines are simple, conservative and bound to be becoming.

The three-piece sport suit will appeal to most smart women for its utility and comfort as well as its chic appearance. When Milady Motorist wears one of these outfits, she has a warm loose-fitting over coat for use when she is in the automobile, and then, if she chooses to walk a bit, either for shopping or a hike through the woods, she can throw off the over coat, and, behold, she is appropriately attired in a snug-fitting *trotteur* costume, really a smaller edition of the over coat. The advantages of an outfit like this are really too obvious to mention. It is particularly desirable when the weather

threatens to be changeable, for there is nothing more annoying than to start out for a day's jaunt wrapped up for cold breezes and have the temperature rise to an uncomfortable point. The three-piece suit offers a splendid solution to this problem.

The ducky little short coats that are being worn so much now are taking hold of the public's fancy like wildfire. There are two distinct types—the straight, boyish little box coat, which emphasizes the youthful slender lines of the wearer, and the closer-fitting model, which is caught into a tight band around the hips. Accordion-pleated skirts are worn with these coats to make a dressier outfit, but, of course, sport wear demands more practical skirts. The fact that these little coats can thus be metamorphosed from a smart afternoon costume to a swagger sport outfit endears them to the modern woman who demands novelty. They also meet the slender purse with ease.

Capes are not being worn so universally at the present time, for the slender, straight lines are more in demand. The long coats are belted as a rule, and exceedingly plain, all such trimming as fancy braid, buttons and other decorations being consigned to the fate of the hoopskirt. Perfectly plain, but oh, so smart! is the *derniere cri*.

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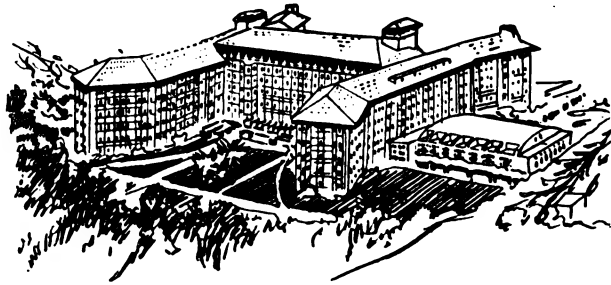
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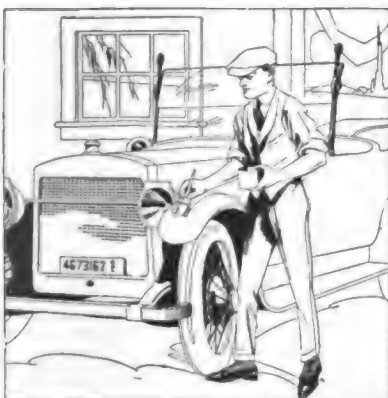
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Claremont Hotel. Hd. of Russel St.	Del Monte..... Hotel Del Monte	Grants Pass, Ore. Oldings Garage	Lake County..... Seigler Springs
Hotel Whitecotton	Del Monte..... Del Monte Garage	Grants Pass..... Josephine Hotel	Lake County..... Stuparich Resort
Shattuck and Allston	Del Rey..... Bunn & Bentley Garage	Grass Valley..... Grass Valley Garage	La Honda..... Bonzagni Lodge
Dana's Garage. Telegraph and Blake	Dinuba..... Service Garage	Greenville..... Lake Almanor Inn	Lake Tahoe..... Al Tahoe Inn
Shattuck Garage..... 2061 Allston	Dixon..... Rossi Bros. Garage	Greenville..... Forest Camp	Lake Tahoe..... Glenbrook Inn
South Berkeley Willard Elec. Service	Donner Lake..... Donner Lake Camp	Greenville..... Greenville Garage	Lake Tahoe..... Tahoe Tavern
	Dorris..... Dorris Garage	Grenada..... Grenada Hotel	Lake Tahoe..... Tallac Hotel
Big Trees, Calaveras County..... Calaveras Big Tree Grove Hotel	Dos Palos..... Dos Palos Garage	Grizzly Bluff..... Weymouth Inn	Lake Tahoe..... Pomin's Resort
Boulder Creek..... Moody & Cress Garage	Downville..... Downville Garage	Groveland..... Yosemite Garage	Lake Tahoe..... Fallen Leaf Lodge
Branscomb..... Wilderness Lodge	Dublin..... The Dublin Garage	Gustine..... Anderson & Kerr Garage	Lake Tahoe..... Homewood Hotel
Bridgeville..... Dinsmore's Resort	Dunsmuir..... Big Brick Garage	Hamilton City..... Hamilton City Garage	Lakeport..... Fraser's Garage
	Dutch Flat..... Monte Vista Inn	Hamilton City..... Bush Garage	Laton..... Laton Garage
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Callistoga..... Callistoga Garage	Elk Grove..... Elk Grove Garage	Hanford..... Hanford Garage	Livermore..... Malley's Grill
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7:00 a. m. 3:20 p. m.
7:30 a. m. 3:40 p. m.
8:00 a. m. 4:00 p. m.
8:20 a. m. 4:20 p. m.
8:40 a. m. 4:40 p. m.
9:00 a. m. 5:00 p. m.
9:20 a. m. 5:20 p. m.
9:40 a. m. 5:40 p. m.
10:00 a. m. 6:00 p. m.
10:20 a. m. 6:20 p. m.
10:40 a. m. 6:40 p. m.
11:00 a. m. 7:00 p. m.
11:20 a. m. 7:20 p. m.
11:40 a. m. 7:40 p. m.
12:00 p. m. 8:00 p. m.
12:20 p. m. 8:30 p. m.
12:40 p. m. 9:00 p. m.
1:00 p. m. 9:30 p. m.
1:20 p. m. 10:00 p. m.
1:40 p. m. 10:30 p. m.
2:00 p. m. 11:00 p. m.
2:20 p. m. 11:30 p. m.
2:40 p. m. 12:00 p. m.
3:00 p. m. *EXTRA TRIPS SUNDAYS AND HOLIDAYS ONLY

LEAVE VALLEJO DAILY

6:45 a. m. 2:40 p. m.
7:15 a. m. 3:00 p. m.
7:45 a. m. 3:20 p. m.
8:00 a. m. 3:40 p. m.
8:20 a. m. 4:00 p. m.
8:40 a. m. 4:20 p. m.
9:00 a. m. 4:40 p. m.
9:20 a. m. 5:00 p. m.
9:40 a. m. 5:20 p. m.
10:00 a. m. 5:40 p. m.
10:20 a. m. 6:00 p. m.
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11:00 a. m. 6:40 p. m.
11:20 a. m. 7:00 p. m.
11:40 a. m. 7:20 p. m.
12:00 p. m. 7:40 p. m.
12:20 p. m. 8:15 p. m.
12:40 p. m. 8:45 p. m.
1:00 p. m. 9:15 p. m.
1:20 p. m. 9:45 p. m.
1:40 p. m. 10:15 p. m.
2:00 p. m. 10:45 p. m.
2:20 p. m. 11:15 p. m.
2:40 p. m. 11:45 p. m.

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Marysville..... California Garage
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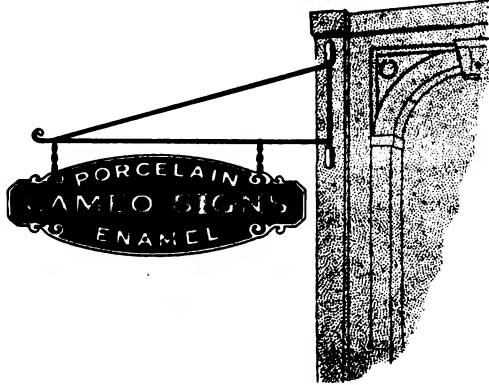


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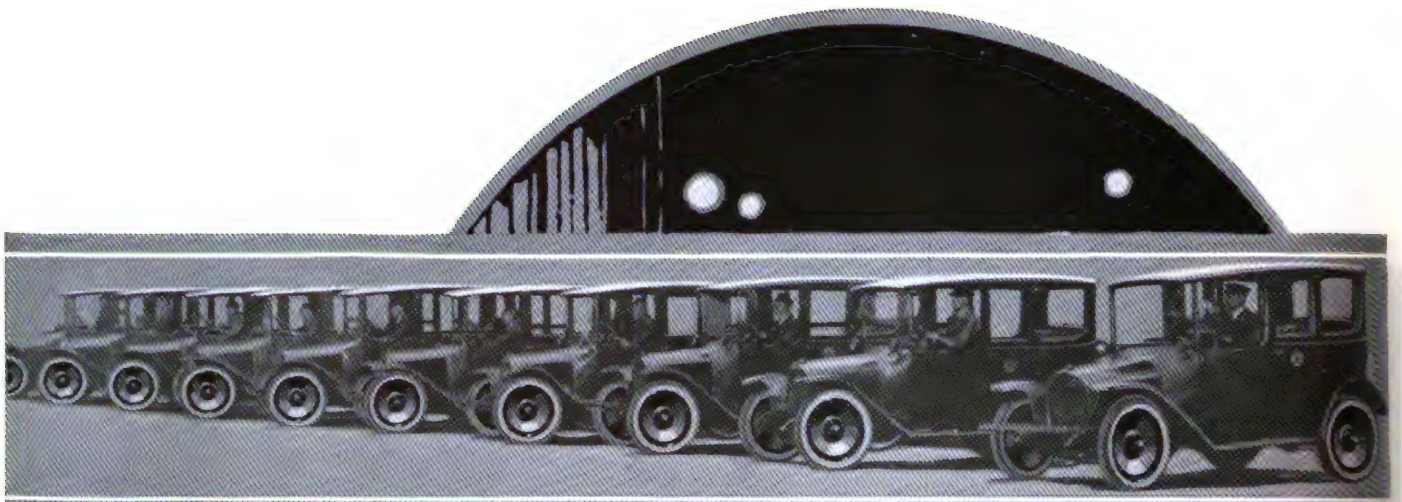
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*Annual
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FEBRUARY, 1922

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YOUR motor car is your personal taxi.

When you use it for business purposes, every minute that it is out of commission costs you real money.

An invisible meter is busily running up a big bill against you for lost time when you have to change tires, when you smash a wheel, or when the car is laid up for any other reason.

Practical business men buy Disteel Wheels to cut out lost time and keep their cars in service.

"We find the Disteels prevent lost time through broken wheels," says John E. Murphy, General Manager of the Yellow Taxicab Company, "and they effect an important daily saving in time required to change tires and wheels. Our drivers can change Disteels in half the time it takes to change demountable rims."

It is just as important for you to keep your car in service. And, aside from the saving in time, wouldn't it be a relief to have tire-changing and wheel-changing made quick and easy?

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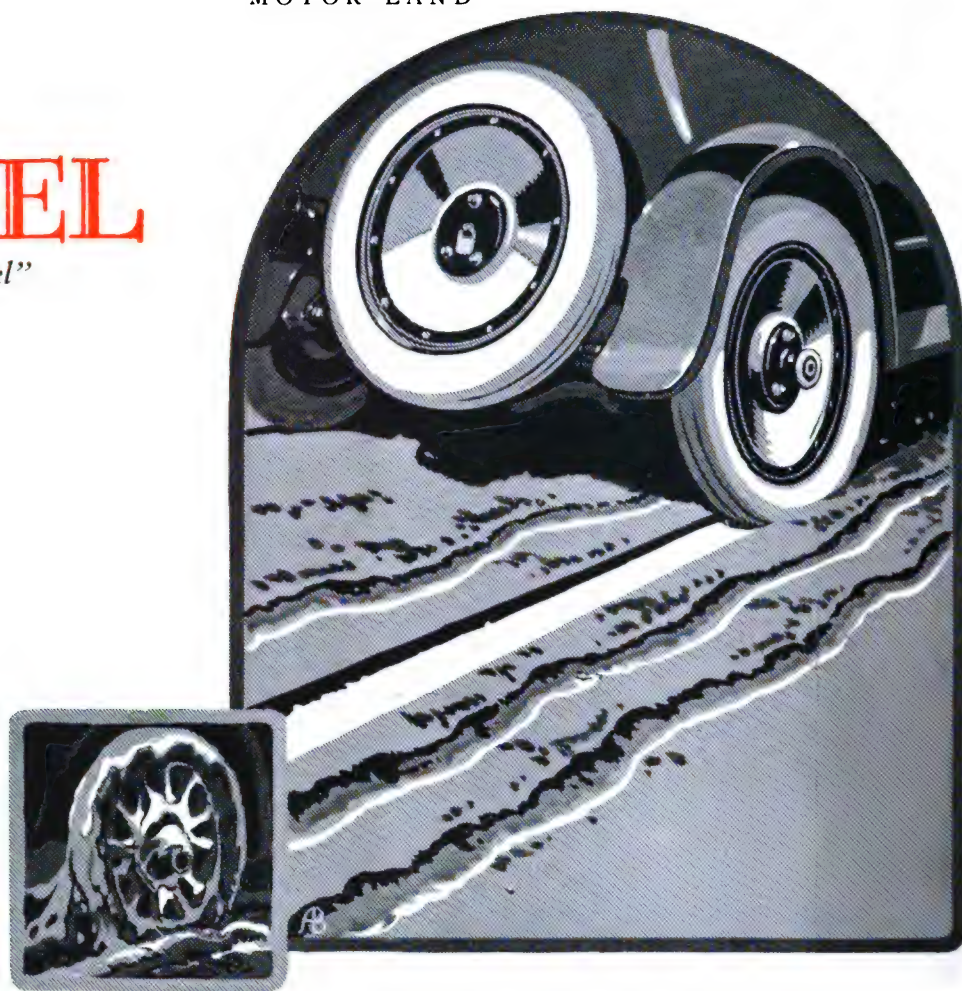
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"The Safe Wheel"



In heavy going Disteels leave the mud behind

You can tell where Disteels have passed through snow or sand or mud by the clean-cut trail they leave. They roll on their way straight as a die — no twisting and grinding such as happens with wobbly spoked wheels.

And Disteels collect no souvenirs. There are no spokes to give mud a chance to cling and "cage." You will appreciate this when you come to wash Disteels after a trip over muddy country roads.

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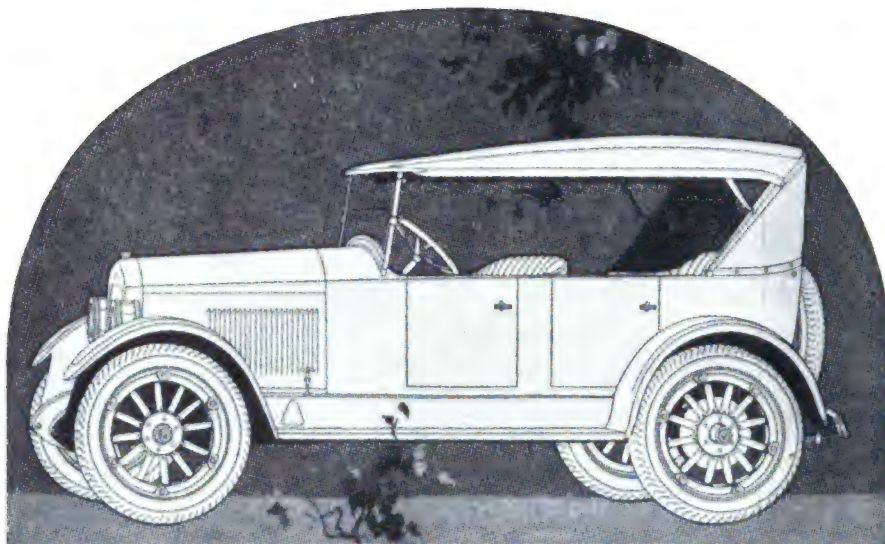
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A Thrifty Six Built by Paige

It is a new fifty-horsepower, six-cylinder motor car with 112 inches of wheelbase and comfortable accommodations for five full-grown passengers.

It is a six because the six is a mechanism of inherent balance. It is fifty horsepower because ample power is the prime essential of performing ability in close traffic and on the open road.

It was designed by Paige Engineers, built by Paige Mechanics in Paige Shops and it will be sold by Paige Dealers in every section of the nation.

It is a car of amazing spirit—real beauty—unlimited stamina. The wealthiest man in the land might well be proud to own and drive one. Yet

the price is only \$1065 f. o. b. Detroit. It is the car that Americans have been waiting for ever since flexibility and smooth, vibrationless power were introduced by six-cylinder engineering.

It is the first real quality six at a quantity price. It is new in name but as sound and trustworthy as its sponsors, The Paige-Detroit Motor Car Company.

These are the facts, brief and quite incomplete. For the rest, we recommend you to the car itself. Go to the Paige Dealer and you will find the Jewett. Then—be prepared for the most delightful surprise of your motoring experience.

PAIGE COMPANY OF NORTHERN CALIFORNIA

CORNER VAN NESS AVE. AND SACRAMENTO ST.

Telephone Prospect 605

Victory Motor Sales Co., 3000 Broadway, Oakland

JEWETT

A Thrifty Six  *Built by Paige*

JEWETT MOTORS, DETROIT, MICHIGAN

15'220

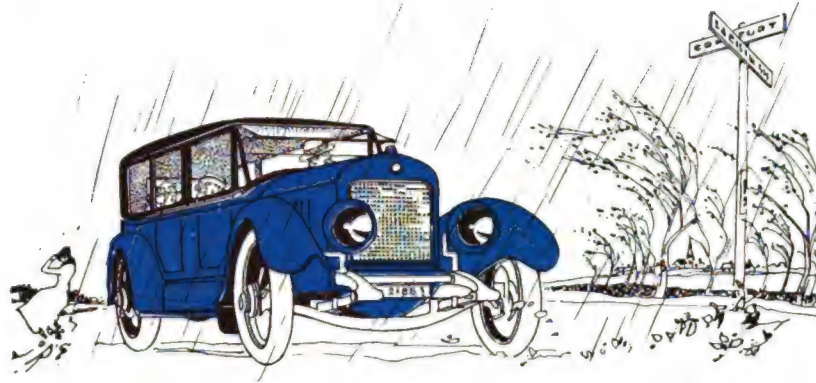
Motor Land



AUGUST, 1922

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"FLEXIBILITY MAKES THE LARKINS TOP BETTER"

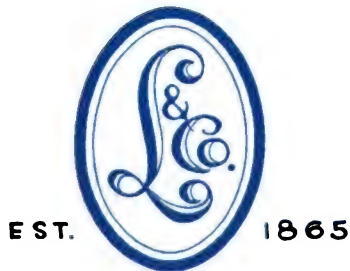


The Larkins Top *All That is Needed to Make* *a Good Car Perfect*

Larkins
"Ry-namel"
Is Revolutionary

in that it combines a lower first cost with an enamel-like finish that endures beyond all expectations. Investigate this before having your car painted.

When comparing it to the stock sedan it is well to remember that the sedan is intended and designed for city use only. Its upholstery demonstrates that fact. The Larkins Top is a city and country top combined. Closed or partially closed for city or evening driving, it can be made as open as any touring car in less than a minute. No need to bother with side curtains, just adjust the sliding glass panels which cannot rattle in any position.



LARKINS & CO.

GEARY, AT FIRST AVENUE
SAN FRANCISCO

Motor Land



SEPTEMBER, 1922

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MAN'S GREATEST TRIBUTE TO MAN

A LITTLE more than a year ago W. C. Durant announced that on August 1, 1921, the public would have the opportunity to purchase a very good motor car at a very moderate price. ~ ~

The success of Durant Motors since that announcement has been the talk of the automobile world.

~ Never before in the history of the industry has a single manufacturer accomplished so much in so short a time!

~ Never before in the history of the industry has a car received so generous and enthusiastic a reception! ~ ~

~ Six Durant factories have been built or acquired, with a capacity of three hundred and twenty-five thousand cars per year. ~ ~ ~ ~ ~

~ More than thirty thousand Durant Fours and Durant Sixes have been sold! ~ ~ ~ ~ ~

~ More than ten thousand men and women are given employment through Durant activities. ~ ~

~ More than fifty-four thousand people have become stockholders in Durant enterprises. ~ ~ ~ ~ ~

~ All this was accomplished in a year of business depression and uncertainty. ~ ~ ~ ~ ~

~ This is a commercial achievement of great magnitude.

~ The world pays its supreme tribute to man when it accepts his services wholeheartedly and unreservedly. The knowledge of this approval gives man his greatest joy. It is the true measure of success. ~ ~ ~

~ We are grateful for this tribute which has come to us.



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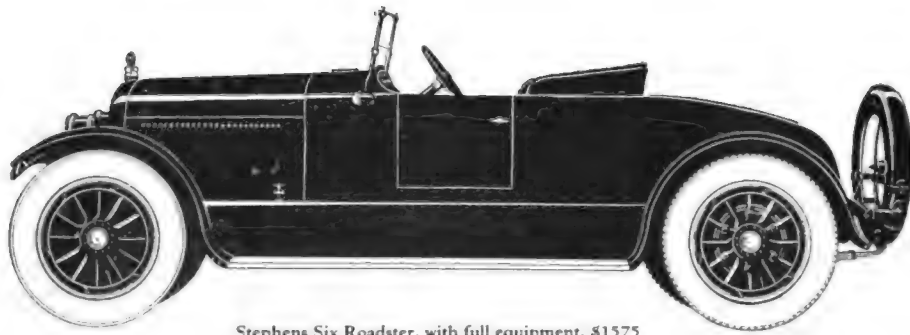
Motor Land



OCTOBER, 1922

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Stephens Six Roadster, with full equipment, \$1575

New roads for old! Come and try out Stephens speed and comfort

Built for two—a thrifty, dignified personal utility car—the spirited performance of the Stephens Roadster lifts even business errands to the plane of recreation and release from work-a-day.

Confidence and the thrill of shared mastery are among the first dividends you'll draw from ownership. Come in and test this great car today.

Drifting through traffic tangles in high gear at two miles an hour, the Roadster will zoom to 50 miles in 20 seconds, when you want acceleration—and exhilaration. With instant throttle response, its Stephens-built motor combines brilliant performance, low upkeep cost and 20 thrifty miles per gallon. Come in and let us show you.

The intake manifold is wholly inside the cylinder head. The flaming exhaust heats it, "cracks" every sluggish atom of gasoline and turns it into high-power gas, radiant with explosive working energy.

Motor, chassis and body are all Stephens-built to the same high standards. The Timken axles, Fedders radiator, alloy-steel springs and new type Gemmer steering gear are all over-size and first quality to match the Stephens-made units. Come in and see for yourself.

Long, low lines and sweeping contours give the Roadster real distinction. Its hand-fashioned body is luxuriously comfortable.

The broad lounge seat—39 inches wide—has Marshall spiral springs for foundation, with deep cushions of crisp, curled hair under hand-buffed leather. Two baggage compartments, adjustable pedals, hand-tailored top, and complete equipment.

A satisfying motor car for the man or woman who wants individual transportation. Come in and judge the Roadster's performance and dollar value for yourself today. Get behind the wheel yourself and test its pick-up, comfort and pace.

Touring Car, (4 pass.) . \$1595	Touring Car, Special . \$1675	Roadster, Special . . . \$1625
Touring Car, Special . 1645	Sedan, (5 pass.) . . . 2000	Brougham, (4 pass.) . . 2450
Touring Car, (6 pass.) . 1625	Roadster, (2 pass.) . . 1575	Sedan, Special (7 pass.) 2550

All prices f. o. b. Freeport, Illinois

STEPHENS MOTOR CAR COMPANY, Inc., Moline and Freeport, Illinois

STEPHENS

MOTOR CARS

W. J. BENSON COMPANY

1420 Van Ness Ave., San Francisco

Branches: SAN JOSE, STOCKTON, SACRAMENTO, FRESNO, MODESTO
BENSON-BECKETT CO., 3068 Broadway, Oakland

Motor Land



NOVEMBER, 1922

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JUST A REAL

GOOD CAR



THE DURANT SIX SEDAN

W
 HEN one thinks of a violin of great beauty and tone, the mind dwells on Stradivarius. When one thinks of the master's touch on the canvas, the mind naturally turns to Michelangelo. When we think of beauty and quality in a jewel, we think of Tiffany.

In automobiles, the master's touch is found in the Durant. Since the beginning of the industry the name Durant has been identified with all things worth while in automobiles.

Earle C. Crenthony Inc.

San Francisco. *Oakland.* *Fresno.*
Sacramento, *Los Angeles.*

DURANT

Motor Land



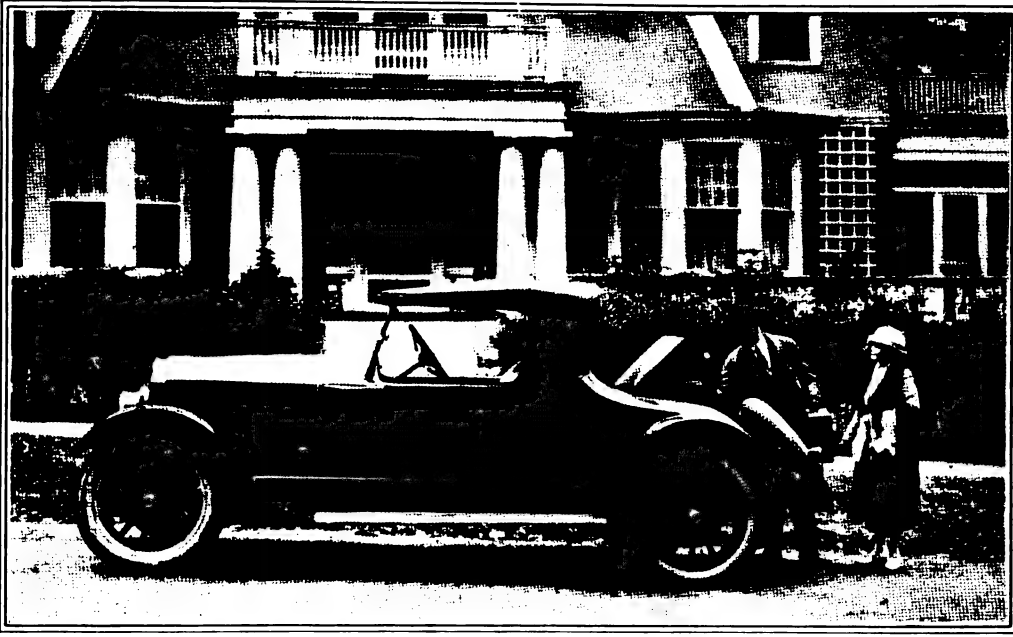
DECEMBER, 1922

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JUST A REAL

DURANT

GOOD CAR



THE DURANT SIX ROADSTER

THE Durant success during the first year is the result of building a product thoroughly, honestly and earnestly. Thirty thousand Durant Fours and Durant Sixes have been sold. A record never before equalled in the automobile industry. By earning the peoples good will, the values of Durant products has spread rapidly throughout the country.

Earle C. Anthony Inc.
San Francisco. Oakland. Fresno.
Sacramento. Los Angeles.

DURANT

This New Gruss Universal Bracket
eliminates cutting the frame



Announcing

A REVOLUTIONARY IMPROVEMENT IN AUTOMOBILE SUSPENSION

GRUSS AIR SPRINGS are compressed cushions of air trapped between oil sealed walls of steel on which your automobile should be floated.

More than ten thousand sets are in use today, halving the upkeep, doubling the life and tripling the comfort of more than ten thousand automobiles. They perform one simple vital function—that of eliminating road vibration.

Heretofore, when installing Gruss Air Springs, it has been necessary to cut the frame of the car. Mind you, it has been worth it.

But the new Universal Bracket pictured above—the result of ten years of untiring

effort and constant thought, makes cutting the frame unnecessary.

This is an exclusive Gruss Improvement. It enables Gruss Air Springs to be readily transferred from car to car. It preserves the unmatched efficiency of the spring. It doubly insures accuracy of application. It shortens the time of installation.

No more cutting the frame! Just a simple, business-like application of this patented Gruss Universal Bracket.

You should see this unusual improvement. Or, if you can't see it, write to the nearest address below for complete information. Just say, "Tell me about the Universal Bracket." Do this today.

Gruss Air Springs

MAKE ALL ROADS BOULEVARDS

Write us for dealer's proposition

GRUSS AIR SPRING COMPANY, *Manufacturers*
SAN FRANCISCO, CALIFORNIA

J. S. BUSHEY CO.

Distributors

717 W. 11TH STREET, LOS ANGELES

PIKE & SMITH

Distributors

865 POST STREET, SAN FRANCISCO



CONSTANT
RELIABLE POWER FOR STRENUOUS TRIPS

FOR the strenuous mountain-and-desert trips, where the distances between fuel supply points are long, you will do well to fill your tank with "Red Crown" and nothing else.

In the six Annual Los Angeles-Yosemite Economy Runs, every car entered has used "Red Crown" and nothing else. "Red Crown" is uniform, wherever and whenever you buy it. It vaporizes rapidly and uniformly in the carburetor, and is consumed *completely* in the cylinders.

Fill at the Red Crown sign—at Service Stations and garages, and at other dealers.

STANDARD OIL COMPANY
(California)



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